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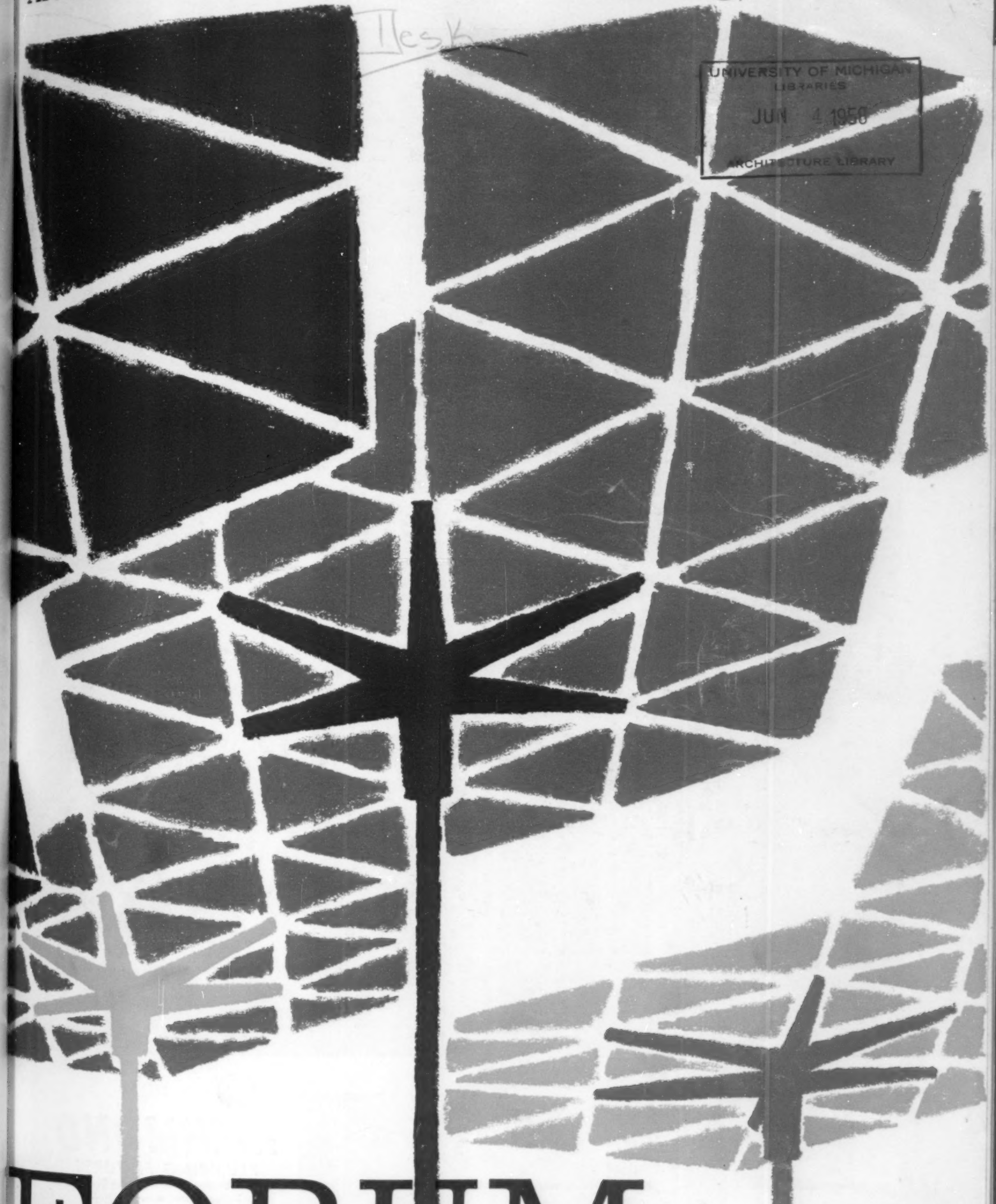

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EDITORIAL

Constant restoration 75

CURRENT ARCHITECTURE

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Hidden amid the engineering stunts at the 1958 World's Fair are five solid architectural achievements. A ten-page picture report.

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The biggest dome yet built—measuring 375 feet across—will shelter a repair shop for tank cars in Baton Rouge, Louisiana.

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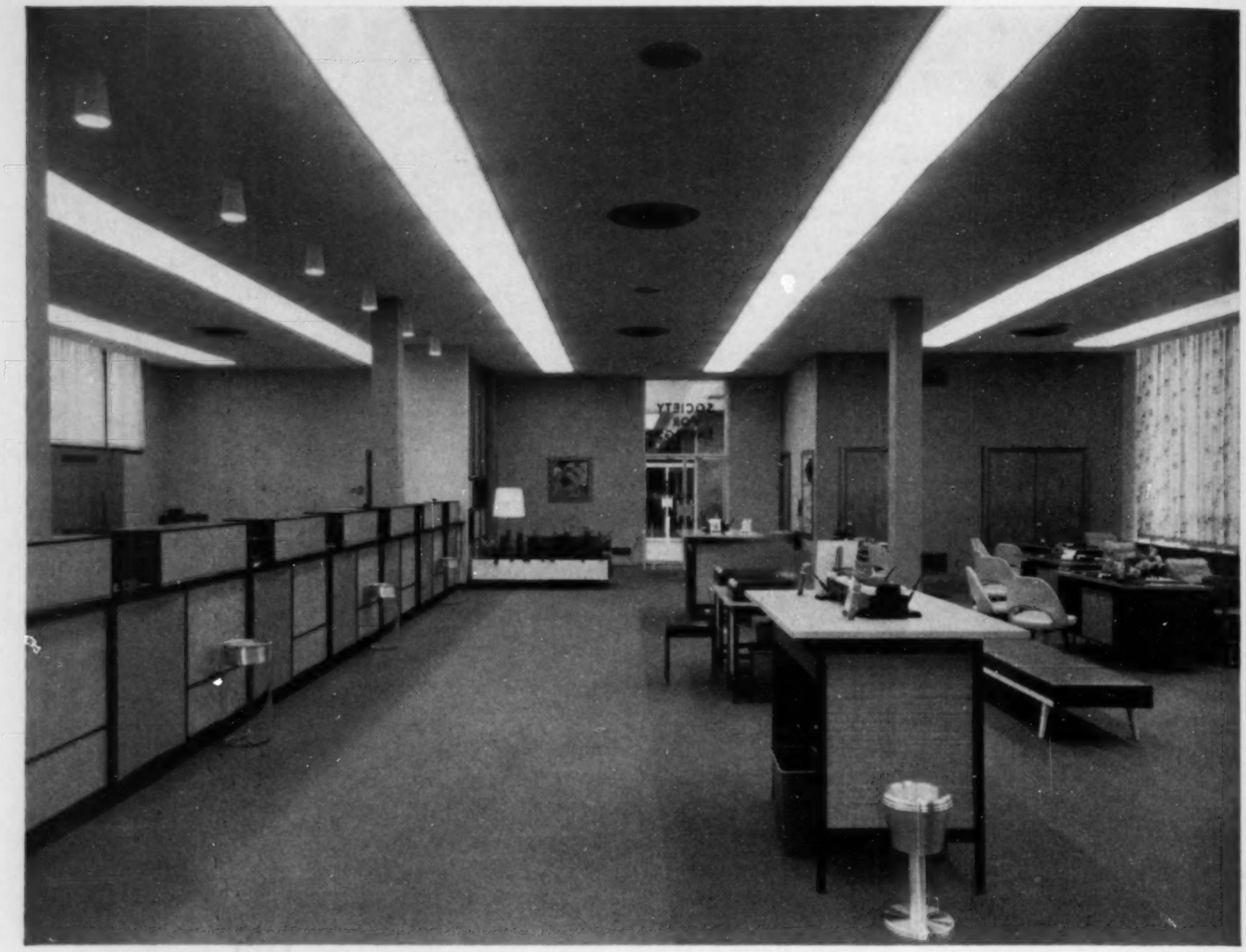

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A. *No, Fixtures are Standard* – **by Litecontrol**

This adroitly planned and handsomely furnished (and illuminated) interior is the main banking floor of the Society for Savings, West Hartford, Connecticut. There is a note of restful charm to the room yet the premises are entirely functional and business-like.

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Like all good installations, this was a "team job" of architect, engineer, electrical contractor, client and ourselves. If *you* are looking for a lighting equipment manufacturer for *your* "team" who can help produce results like this *at sensible cost* — look to Litecontrol.

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ARCHITECT:
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ENGINEER:
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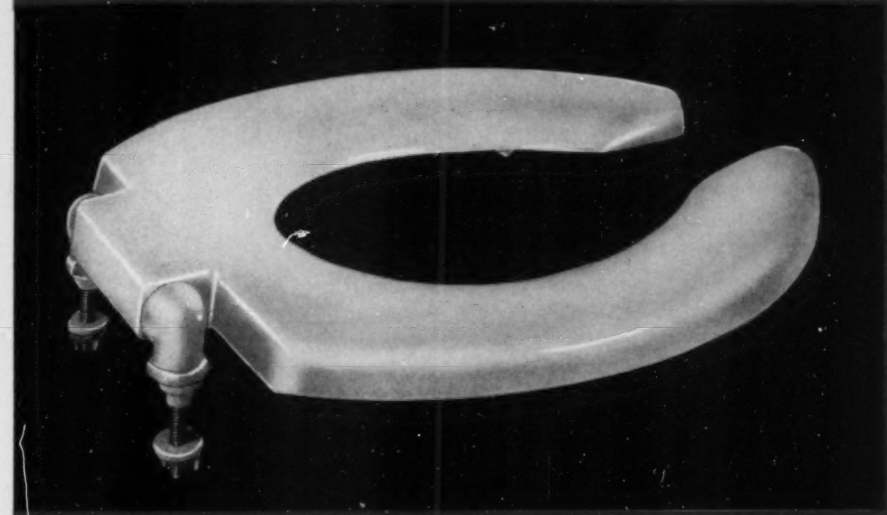

Extra strength No. 95 Olsonite includes lock nuts and washers that allow permanent installation with finger pressure alone.

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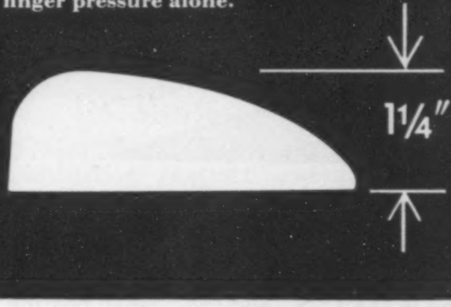
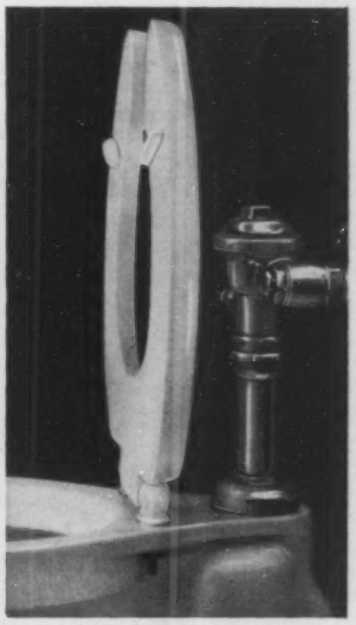
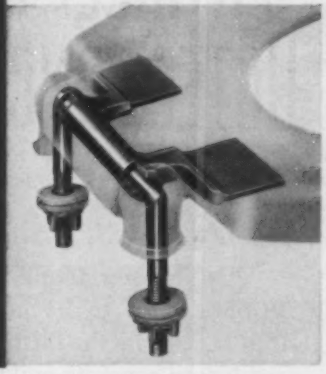




Concealed check hinge prevents seat from rising more than 11° past vertical. It's standard on all Olsonite No. 95's and 97's.



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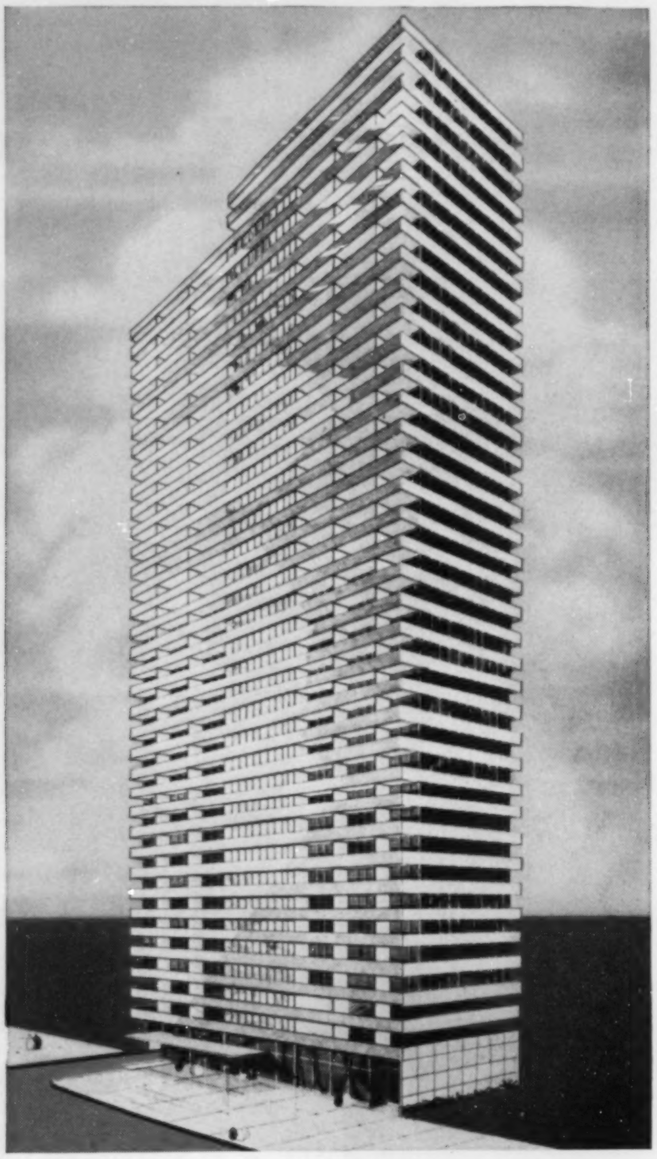

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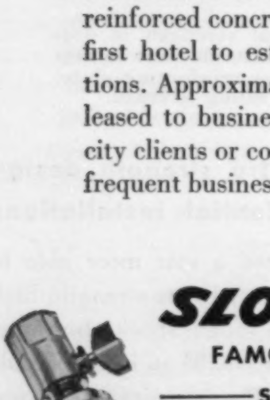

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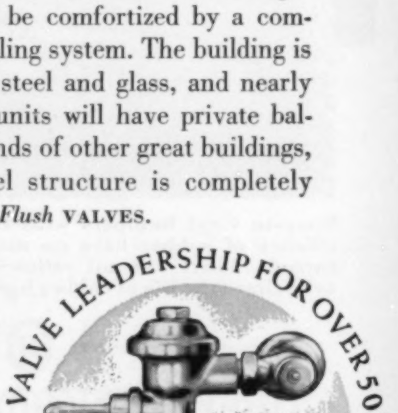
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Construction outlook brightens; "indicators" of future building activity turn up

In the first four months of this year, construction has been about on a par with 1957. Total new construction for the January-April period was $13.4 billion, or just 2 per cent better in dollars than the same period last year. Although the rise in building costs has slowed lately, most measures of costs indicate they have risen at least 3 per cent in the past year, indicating that the volume of physical construction put in place is actually trailing last year slightly. But now there are firm indications that construction will pick up markedly as the industry moves into summer, and building may even do what forecasters predicted a few months ago—be a major factor in pulling the economy out of the recession.

Here are some of the key indicators that are causing building industry economists—including FORUM's Consultant Miles Colean—to feel a little better about their early forecasts:

▸The National Lumber Manufacturers Association reported that new orders for lumber in the first week of May were 5 per cent above the like week a year ago, making the third straight week orders had been ahead of 1957. All through last year, new orders lagged behind 1956.

▸Construction contract awards, as measured by F. W. Dodge Corporation, were 18 per cent higher in April than a year ago. This is the first year-to-year rise in contract awards in five months, and the size of the increase indicates it is more than a fluke.

▸Contract awards for heavy construction, measured by *Engineering News-Record*, rose for the first time this year. Awards were 8 per cent higher in April than in April 1957, and 13 per cent higher than in March.

▸Demand for structural steel took a spurt upward late in April and continued strong in May. Steelmen credited the rise in orders for structural shapes with raising the over-all steel operating rate from less than 50 per cent capacity to nearer 54 per cent last month.

▸Applications for mortgage insurance under Federal Housing Administration programs rose 26 per cent from March to April, putting them 89 per cent above April 1957. The 31,610 applications for new housing units represented the best April figure since April 1955. Likewise, requests for appraisals from the Veterans Administration under its mortgage guarantee program boomed in April, rising 195 per cent above March, and about 30 per cent above April 1957. The figure for April appraisal requests was the highest for any month since October 1956.

▸Demand for asphalt roofing has picked up sufficiently in recent weeks to permit some major manufacturers to raise their prices 10 per cent to 20 per cent. George K. McKenzie, executive vice president of Flintkote, says new orders for roofing materials have been coming in at much higher volume than in past months. Flintkote is one of three companies that raised prices last month.

Before the dawn

All of these factors have led building economists to take a more optimistic attitude toward the building picture. In fact, many of them are putting more emphasis on these indications of future building volume than on current indicators of past activity, such as the Commerce and Labor Departments' monthly report of new construction expenditures. These figures actually lag more than a month, and economists now caution that it may be two months or more before the monthly report reflects the pickup in activity that is forecast by the above factors. Thus, it may be July or August before the present upsurge in awards, FHA and VA applications, and rising demand for building materials is reflected in actual figures for new construction.

Indeed, the April statistics on actual building volume were disappointing. Industrial construction dropped more than expected—25 per cent below April 1957—as did the building of stores, restaurants, and garages—which was off 21 per cent from a year previous. For the first four months of this year industrial and commercial building declined by 17 per cent and 20 per cent respectively (FORUM had forecast probable declines of only 11 per cent and 6 per cent). Moreover, there is little likelihood of either category rebounding strongly from its present slump.

continued on page 6

BOX SCORE OF CONSTRUCTION

(Expenditures in millions of dollars)

PRIVATE BUILDING	April 1958	Jan.-April 1958	Jan.-April 1957	±%
Nonresidential	653	2,696	2,848	—5
Industrial	204	893	1,079	—17
Commercial	259	1,038	1,053	—1
Office buildings, warehouses	158	630	546	+15
Stores; restaurants; garages	101	408	507	—20
Religious	61	254	259	—2
Educational	40	162	163	—1
Hospital; institutions	46	187	141	+33
Residential (nonfarm)	1,292	4,648	4,643	**
Public utilities	478	1,750	1,579	+11
Total Private*	2,563	9,590	9,558	**
PUBLIC BUILDING				
Nonresidential	371	1,361	1,361	0
Industrial	31	118	164	—28
Educational	238	886	853	+4
Hospital; institutions	28	100	105	—5
Residential	62	239	124	+93
Military	72	292	346	—16
Highways	370	1,070	980	+9
Sewer; water	111	406	411	—1
Total Public*	1,103	3,773	3,599	+5
*Grand Total	3,666	13,363	13,157	+2

* *Minor components not shown, so total exceeds sum of parts.*

** *Less than 1 per cent.*

Housing construction also failed to come up to expectations. New starts in April were up substantially from March, hitting a seasonally adjusted rate of 950,000 compared to March's 880,000. But the April figure was still below the 962,000 rate of April 1957 and left a lot of ground to be made up to get to the 1,050,000 starts FORUM predicted for the full year.

The lag in housing starts so far this year has been wholly concentrated in FHA and VA dwelling units. Conventionally financed starts were actually 5 per cent higher in the first quarter of this year than in 1957. But the drop in federally insured and guaranteed starts was enough to cause over-all figures to dip below last year.

Government spending, particularly at the state and local level, continues to be a major strong point in the construction picture. In the first four months, public building was up 5 per cent from last year, with the biggest year-to-year gains scored by residential building and highways.

Architects are enjoying a record business year—but a FORUM survey shows that most are scrambling for jobs.

How much—or how little—are architects feeling the current business recession? In an effort to find out, FORUM last month surveyed 82 architectural firms in 12 of the largest cities in the U.S. There were big firms (over 300 employees, over $150 million of new construction) and small ones (fewer than five employees, including partners).

From the survey, these broad patterns emerge:

▶For most architects, 1958 will be a good year both in volume of business and in profits. About 75 per cent of the architects expect 1958 to be their best year ever.

▶The firms suffering most from the current recession are those specializing in industrial architecture, or in store design in areas where shopping centers have already been overbuilt.

▶Some smaller firms report a drop in new jobs because bigger firms are now going after jobs that in previous years never interested them.

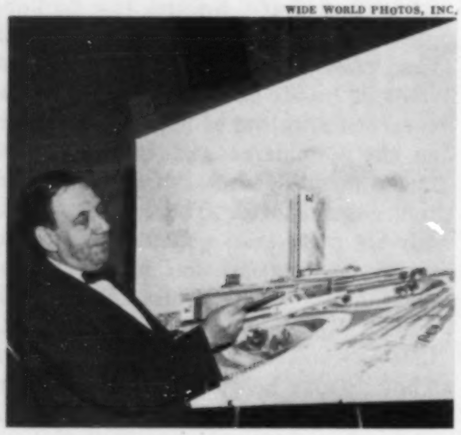
▶Almost every firm in the survey reports it has seen an unusually large number of job-seekers—mostly draftsmen and architects with little experience—in recent months. Some firms say that there are more draftsmen looking for work now than at any time since the 1949-50 recession.

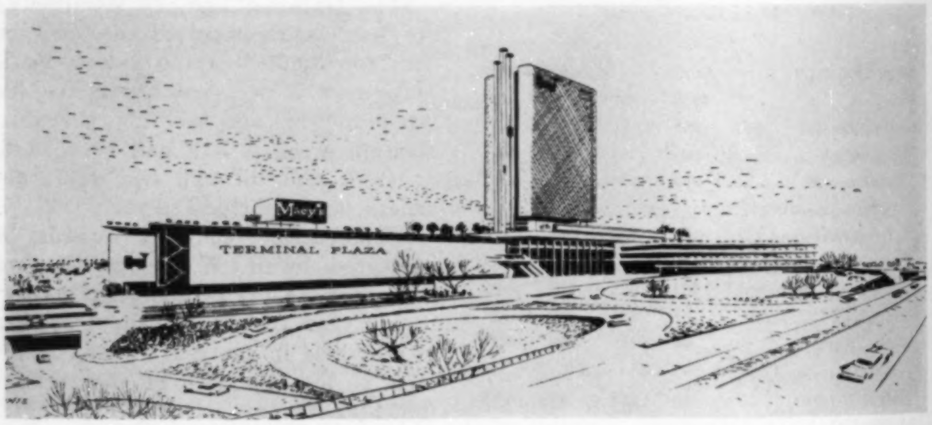
▶Many architectural firms are going after government jobs: local, state and federal. This is the fastest-growing area of architectural practice.

▶There is more active soliciting of new business being done by architects today, even to hiring professional salesmen to recruit new business.

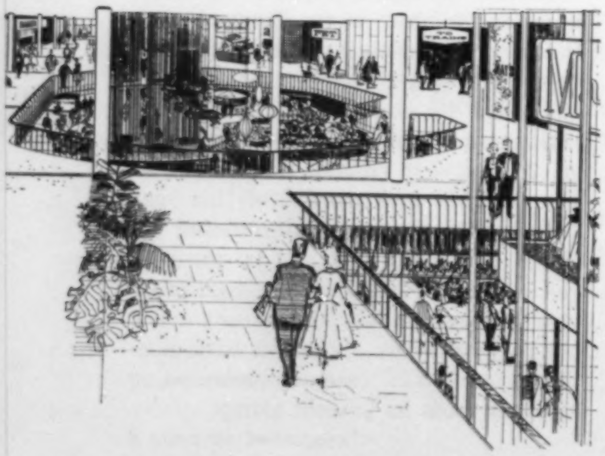
▶Many architects are reappraising their role in building, putting more

WIDE WORLD PHOTOS, INC.





GRUEN DESIGNS $41 MILLION SHOPPING CENTER, OFFICE BUILDING FOR NEW ROCHELLE, N.Y.



New Rochelle, N.Y., a fast-growing city about 15 miles from midtown New York, will be the site of the nation's "first urban shopping center." The $41 million center has been designed by Architect Victor Gruen (above left), famous for his Southdale Center in Minneapolis and other shopping centers. It will be built by two cousins, Richard and Lawrence Zirinsky, who have built mostly industrial and commercial buildings for lease to corporations. Unlike Gruen's other shopping centers, which were largely horizontal structures, the new Terminal Plaza project will have 24 levels, including a 15-story office tower to be sheathed in a grille of gold anodized aluminum. The center will be served by buses and the New York, New Haven & Hartford Railroad, which will lease a new station to be built right into the center. The New Haven sold its land and air rights so the center could be built over the tracks. R. H. Macy's will take up about one-third of the total 750,000 square feet of rental shopping space, and the rest will be divided among 70 smaller shops. There will also be a 100-room motel, complete with swimming pool. Nearly two-thirds of the space in the center will be taken up by six levels of parking facilities—5,200 stalls covering a total of 2 million square feet. There will be shopping malls and courts (drawing, left), similar to those in other Gruen shopping centers, with controlled climate allowing semitropical plantings and live birds to add color. The project is expected to be finished by late 1960.

emphasis on shaping their firms into successful business enterprises.

Within the framework of these broad patterns, there are various regional differences in the flow of new business and the "mix" of building types. In Chicago and Pittsburgh, office buildings are considered a hot item, while in New York, two of the biggest firms in the city believe that the greatest office-building boom ever seen anywhere is tapering off. Indications of a slowdown in the pace of New York office building have been cited by realtors, too (FORUM, May 1958).

In Chicago, where industrial and commercial building has suffered badly in the past six to nine months, some architects report new business down from 25 per cent to 40 per cent below last year. State and local government jobs have not come along fast enough to take up the slack. Schools and hospitals are still, as they have been for some time, the most active categories of building in Chicago.

One Chicago architect says: "There are better buys on the market now . . . and contractors are frequently cutting bids . . . we're going out of our way to advise clients who are on the fence to build now because they'll never get it any cheaper."

San Francisco architects report record or near record business this year, with new jobs coming into their offices at a good rate. But one said there were more draftsmen and architects looking for work than usual.

Throughout the country, a majority of the firms surveyed said that new business was coming in this year at least as fast as it did last year, although not always up to some individual firms' best years. Only about 20 per cent of those queried said that new business was slower than last year.

In Atlanta, for instance, one of the largest firms in the city reports its volume of new business as "rushing," but it does say that "the industrial department is dragging." As with other firms around the country, this one says that public building has become a major part of its workload in recent months, and it expects this trend to continue.

In New York, speculative builders for almost all sorts of buildings—offices, shopping centers, other commercial structures—have slowed down their activities. One of the biggest office building architects in the city reports that its "one-shot" clients are no longer much of a factor in its business, but that its long-term clients have not retrenched much yet.

New York generally seems to have been hit harder by a slowdown in building—and demand for architects' services—than other cities, particularly Atlanta, Pittsburgh, and Philadelphia. One New York firm, with annual volume of over $50 million, says that new work coming into the office is 75 per cent below six months ago. However, this firm's total dollar volume of work on the boards is greater than ever before, insuring a peak year in 1958. But the top partner is worrying about next year, and says he has "had to get out and scratch" for new jobs. Another New York firm, with over $100 million of work each year, says it had experienced a slight decline in the number of inquiries regarding new buildings in the first quarter of this year, but that this has since picked up. The firm expects 1958 to be better than 1957, both in terms of total dollar volume and work on the boards and in terms of its work backlog.

In Washington, D. C., architects have noticed a definite slackening in new jobs for speculative buildings, but say that large commercial clients are not holding back on new projects at this time.

Over-all, the survey indicates that most nonresidential and apartment building should be strong through this year, and at least into the first six months of 1959. (The sample of home designers was too small to guage home-building volume.) Easier money, and better bids by contractors are all factors that should make building seem attractive now, and architects are selling this point to clients.

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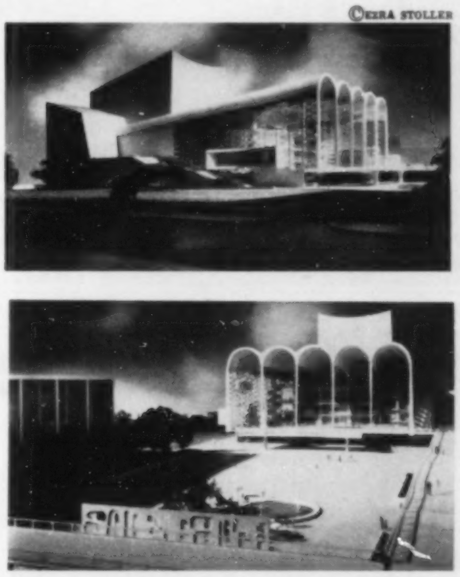

NEW METROPOLITAN OPERA HOUSE

Last month, a startling design was unveiled for the new Metropolitan Opera House which will be part of the Lincoln Center for the Performing Arts in Manhattan's Lincoln Square redevelopment project. Designed by Harrison & Abramovitz, the new building replaces an earlier, less spectacular design. The new Met will be flanked, on either side of a broad piazza, by a new concert hall, also designed by Harrison & Abramovitz, and a theater for the dance, designed by Philip Johnson. The Met building itself is highlighted by a high, vaulted glass façade which fronts the square. On either side of the entrance are decorative broad honeycomb of grillework.

Eisenhower hits public works measures

The legislative future of a Senate bill aimed at increasing local public works spending dimmed considerably last month. The bill, sponsored by Senator Fulbright (D, Ark.) would provide an additional $1 billion in loan funds to the Community Facilities Administration (part of the Housing & Home Finance Agency) for loans to localities for water works, sewer works and other public projects (FORUM, May 1958). In mid-May, President Eisenhower indicated his strong feelings against such a measure. He said, "I don't believe that there is any additional public works to be decided upon, brought into the appropriations picture and finally built that will do anything for this present recession." The President estimated that it would be two years before any projects could be "in construction."

President Eisenhower's pronouncement seemed to presage a sure veto of the Fullbright bill, should it pass the House. Late in May, it was still mired in the House Banking Committee, where amendments were being proposed that would make the bill even more unpalatable to the Administration. For one thing, some Democratic members of the committee were urging that the interest rate on the loans to communities be cut from 3½ per cent to as low as 2½ per cent. This was based on testimony that lately interest rates on loans to municipalities have dropped sharply. Fulbright himself had wanted a 3-per-cent rate in his original bill, but Senate Republicans banded together to beat that proposal by one vote, and set the interest rate at 3½ per cent.

While the House debated the Fulbright public works bill, and the President indicated his lack of enthusiasm for such measures, the Senate steamed along with another public works program. This one was a $380 million "permanent" loan program—as distinct

continued on page 9

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from temporary antirecession measures—for aid to chronically depressed economic areas. The Senate passed the bill last month by a 46 to 36 party-line vote. The bill authorizes loans at 3.5 per cent interest to localities for projects designed to attract new industry, including buying land, machinery and equipment for industrial plants, or for water and sewage systems.

Easier credit may not spur housing demand much

As mortgage money continues to become more available, and interest rates continue to soften, construction industry experts are busy analyzing the effects of easier money on actual building. There is a growing belief that in one key area, residential building, easier money may not stimulate as much building as had been expected.

Dr. James J. O'Leary, director of economic research for the Life Insurance Association of America recently predicted that "investors will probably continue to shift their investments from the corporate bond market into real estate mortgages where yields are now relatively more attractive." O'Leary then added, however, that most experts feel that "The economic climate seems much less favorable today for easy mortgage credit to have a pronounced stimulating effect on housing demand." The reason, says O'Leary: "We have largely caught up with housing demand, especially at the current high level of housing and land prices."

Interest rates on conventional mortgages have dropped .5 per cent to as much as 1 per cent already in some areas and there have already been cases of premiums being paid for FHA-insured 5¼ per cent mortgages. A recent survey conducted by the National Association of Real Estate Boards showed that mortgage loan funds were "ample" for new homes in 67 per cent of all cases polled, compared to only 47 per cent at the end of last year. Likewise, mortgage funds available to finance the purchase of existing homes in good neighborhoods were considered ample in 61 per cent of all cases, compared to only 40 per cent last December. Another indication of easing money conditions was the announcement by the Federal National Mortgage Association that it had made commitments to purchase $180 million of new FHA-insured mortgages in the first six weeks since passage of the Emergency Housing Bill (FORUM, April 1958).

Thomas P. Coogan, president of Housing Securities, Inc., a big New York mortgage brokerage firm, feels that the recession has changed the complexion of the housing market so much that the demand for housing cannot be revived simply by easing credit. Basically, the factor stifling demand for new housing, Coogan says, is the high cost of land and building. But he believes "there is a tremendous latent demand for our product if we can produce it at a price people can afford to pay," and he cites smaller cities and towns, low income groups and minority groups as all likely markets for a stepped-up volume of new housing—if prices can be brought under control.

Coogan also feels that federal housing agencies "need a massive overhauling, giving them a position of authority and responsibility." He favors a Department of Housing & Urban Affairs with full cabinet status to coordinate all housing programs of the federal government.

As Congress continues drafting the Housing Bill of 1958, such criticisms of federal housing policies are being listened to more closely than ever before. And home builders, testing the vigor of the early summer market, are hoping that Coogan and the housing economists are wrong when they say that homebuilding, like the automobile industry, has temporarily priced itself out of its market.

IDLEWILD HOTEL OPENS

The sparkling new arrivals wing of New York's International Airport (FORUM, February 1958) got a fitting companion piece when the new International Hotel near the airport opened last month. The 320-room hotel, located 2.5 miles from the new arrivals wing, was built by the Port Authority of New York, designed by Architect William Tabler (see page 33), and will be operated by Knott Hotels Corp., which has leased the hotel for 25 years at about $425,000 per year. The new hotel stands on reinforced concrete pillars, to give it an "air-borne" appearance.

Building unions fight over old issues

The AFL-CIO, which only last February attempted to solve its two most perplexing problems in the construction industry — featherbedding and jurisdictional disputes between industrial and craft unions—is confronted with these same old conflicts again as the busiest part of the building season gets under way.

Last winter, the AFL-CIO and the National Constructors Association, composed of two dozen heavy construction firms, ironed out a code of behaviour aimed at stamping out longstanding featherbedding practices in construction (FORUM, March 1958). This code became known as the "Ten Commandments," and contractors throughout the country hoped that local unions would heed the directions of the AFL-CIO's Buildings Trades Department, which endorsed the agreement. But so far, local union sentiment has been lukewarm, to say the least. Complaints have already been voiced from Chicago, Cleveland, Los Angeles and, perhaps loudest of all, from St. Louis. In that city, local building unions have balked at the new code, because they say it needs "modification and clarification." Evidently, one thing that is making the locals cautious is the feeling that if they do sign an agreement subscribing to the new code, it is a tacit admission of past featherbedding practices. On the other hand, at least one big construction job has been held up in the St. Louis area because the client, a large steel company, refuses to go ahead until the unions sign the "Ten Commandments."

Even more serious to the AFL-CIO than the reluctance of local unions to back the Building Trades Department on featherbedding curbs, is the renewed outbreak of jurisdictional squabbling between craft unions and industrial unions over which union controls which areas of building and, most important, over maintenance. At a top level conference of the AFL-CIO executive council last month, the Building Trades Department again complained that the United Steelworkers were sniping at their territory. AFL-CIO President George Meany said he would investigate the charges, which center about steelworkers demands that they be allowed to do new construction work on some plants that have always fallen in their jurisdiction. Last February's agreement on

continued on page 11

NEW FIAT PreCast SHOWER FLOOR

LOWERS COST OF SHOWER CONSTRUCTION

Monterey model available in six sizes—rectangular, square and corner designs.

The new FIAT *Monterey* shower floor has a PreCast integral threshold and curb that completely eliminates the most expensive steps in shower construction: the built-on-the-job floor, threshold and pilasters. Glass filler panels at the jambs replace the pilasters, rest directly upon the curb of the *Monterey*. The FIAT PreCast Shower Floor simply slides into place—there's no need for sub-pan, mortar, tiling and hours of costly labor. Try this new shower technique that saves you money and produces added sales appeal.

The *Monterey* shower floor, *PreCast* of sparkling terrazzo, is permanently leakproof and furnished as a complete unit with solid brass drain and stainless steel strainer plate. There is nothing else to buy —nothing else to install! The photograph shows an excellent and economical shower combining the *Monterey* floor with a glass filler panel and door forming the front. Either hinged or sliding doors, by others, may be used as the solid threshold provides a convenient foundation for the track.

It's so much easier to see the advantages of PreCast Floors than to read about them. That's why we would like just five minutes of your time to show you this cross section sample. Clip coupon to your letterhead and get full information. No obligation of course.

DEPT. T
FIAT METAL MANUFACTURING CO.
9323 Belmont Avenue, Franklin Park, Ill.

Please send complete information on your complete line of shower equipment.

Name____________________
Company____________________
Address____________________
City____________ State________
Type of Business____________________

FIAT

FIAT METAL MANUFACTURING CO.

Since 1922...First in Showers / *Packaged Showers • Doors • Floors* / *Toilet Room Partitions*

FOUR COMPLETE PLANTS: Long Island City 1, N. Y.; Franklin Park, Ill.; Los Angeles 63, Calif.; Orillia, Ontario, Canada jurisdictional disputes gave the Building Trades Dept. unions control over all new building, and the industrial unions control over most areas of maintenance.

Shortly after the executive council met, the Oil, Chemical & Atomic Workers International Union accused the building trades unions of encroaching on its traditional territory. The union claims that building unions are trying to muscle in on maintenance work in petroleum plants. The oil and chemical workers have filed their complaint with the AFL-CIO.

FTC cracks down on real estate confidence racket

P. T. Barnum once said "There's a sucker born every minute." Lately, it would seem that the birth rate of gullible people is going up. Phoney deals, especially in real estate, are on the rise.

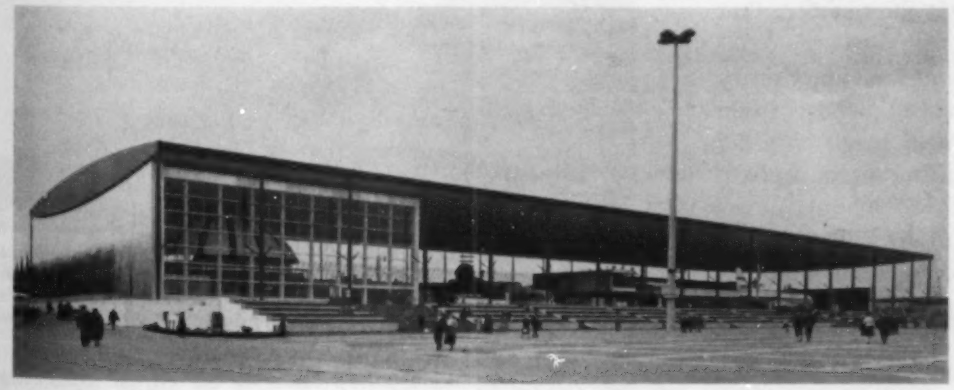
In recent months, the Federal Trade Commission and state real estate commissions in California, Connecticut, Illinois, and other states have been acting against increasing evidence of a confidence game in the sale of real property. Official estimates of this racket are that some 75 firms, and $50 million a year, are involved.

Here is the way the typical real estate "advance fee" game works: The "sales representative," operating from head offices usually located in Chicago, southern California or Florida, goes through the "real property for sale" columns of rural newspapers, picking out likely suckers. He contacts his prospect, usually in person but occasionally by phone, and tells him that he will get him a buyer. He fast-talks his customer into believing that he is actually guaranteeing him a buyer, frequently at a much better price than the customer had ever hoped to get, and gets him to sign a contract which is waved loosely to keep the customer from seeing the fine print. The salesman then usually extracts a check from the would-be seller, telling him that he will not cash it for at least ten days or when he gets a buyer. (Actually the con man usually cashes the check immediately.) When the "client" grows impatient and tries to find out what happened to his buyer, he discovers that the contract he signed only guaranteed him certain advertising and "services" for a fee—and frequently, the first check is not the whole fee. The poor "client" may be hauled into court to pay still more. And the services he gets are merely window-dressing, with no genuine effort to negotiate a bona fide sale.

The FTC has taken up 36 cases since 1954—and these are only the most flagrant cases of misrepresentation culled from mail complaints which lately have been coming in at a rate of 150 a month to FTC's own office, and in much larger volume to real estate boards and Better Business Bureaus. Of the 36 cases FTC has taken up, 24 are still being investigated, seven investigations have been completed with a filing of charges, and four have been settled via consent decrees, which provide stiff penalties if violated.

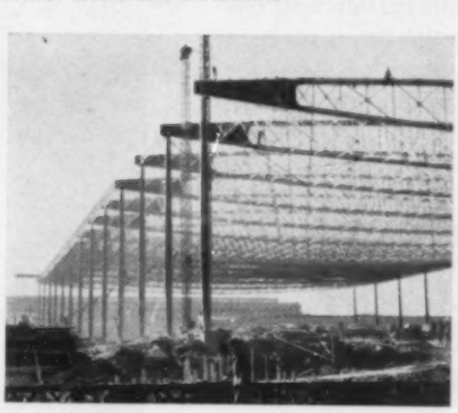
One company, Universal Interchange Inc., of California, and its subsidiaries, is currently fighting FTC's action to stop its activities. UI grosses over $2 million a year, operating mostly from California, but with representatives all over the country.

There are many problems in combatting this kind of racket. A few years ago, the National Association of License Law Officials, comprised of real estate commissioners from the U.S. and Canada, started moving against the advance fee operators, but found that all they could really be indicted for was violation of some state licensing laws. In fact, the advance fee operators contended that since they sold no real estate, they were not even subject to licensing. So far, this issue has not been resolved in the courts of the few states that have passed laws to wipe out the racket.



REYNOLDS AWARD GOES TO BRUSSELS FAIR TRANSPORTATION BUILDING

The $25,000 award of the Reynolds Metals Co. for a structure using aluminum went this year to six Belgian architects for their design of the Transportation Pavilion at the Brussels Fair. The 650 foot long building, resembling an aircraft hangar, has an aluminum roof and ceiling supported by 19 aluminum latticed trusses and 28 columns. The front of the building is open, and the sides can be kept open when weather permits. Architects are: T. Hoet-Segers, Madame F. Hoet-Segers, H. Montois, R. Courtois, J. Goossens-Bara, and R. Moens de Hase. (For other buildings at the Fair, see page 78.)



Washington, D.C. zoning gets tougher

The nation's capitol got a new zoning code last month, after more than three years of wrangling. The new code represents a compromise between advocates of a much stiffer zoning law than the previous 38-year-old code, and business groups which wanted the old code eased. Generally, the new code is more restrictive than the old one, following fairly closely the 1956 recommendations of New York zoning consultant Harold M. Lewis.

The final approval of the code by the District Zoning Commission eased a problem that had been plaguing Washington architects and builders for weeks. With the certainty of drastic zoning revisions hanging over them, many builders did not know whether to push building plans through fast to take advantage of the old rules, or to wait and see whether the new code, though generally more restrictive, might not prove more beneficial for their particular project. One Washington architect said that over $8.5

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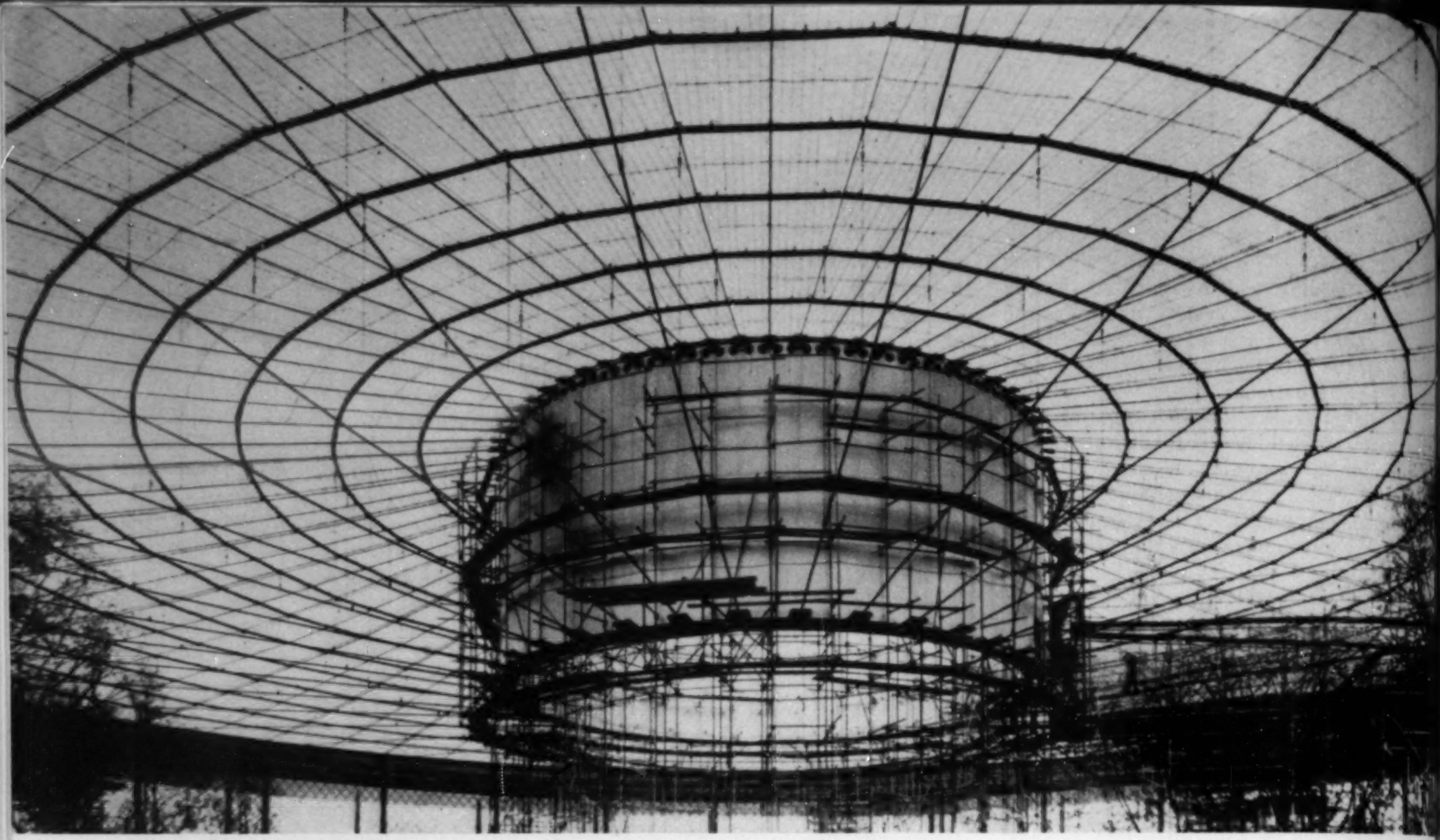


U.S. Pavilion roof (under construction) Architect, Edward D. Stone; Contractor, Blanton Aubert

The story behind that fabulous STRUCTURAL translucent roof

A 302 ft. diameter, free-span translucent roof crowns architect Edward Stone's masterful U.S. Pavilion at the Brussels World's Fair.

Getting a translucent material for the roof was a problem. It had to be a *structural* material that would hold up under anticipated snow loads. It had to be a light material since the entire 72,000 sq. ft. roof would be supported only by cables. And it had to have a flexible, weather-tight joint system that would "give" with the wind.

Kalwall translucent structural panels and joints met every requirement. Made of rugged fiberglass sheets bonded to an aluminum grid core, these sandwich panels weigh only 1.5 lbs/sq. ft. Strong and load bearing they diffuse direct sunlight to soft, even illumination.

Kalwall panels are widely used for curtain wall construction. Over 300 churches, schools and commercial buildings have been built with them. Another 500 have been specified or are under construction.

Made in six translucent colors, in modular units of 4'x8', 10', 12' & 20' (1-9/16ths" or 2-3/4" thick) Kalwall panels go up quickly — can be interspersed with most any curtain wall system. Perhaps this dramatic building material has a place in one of your designs for wall or roof. Write, or wire, Kalwall for full details. Kalwall Corporation, 43 Union St., Manchester, New Hampshire.

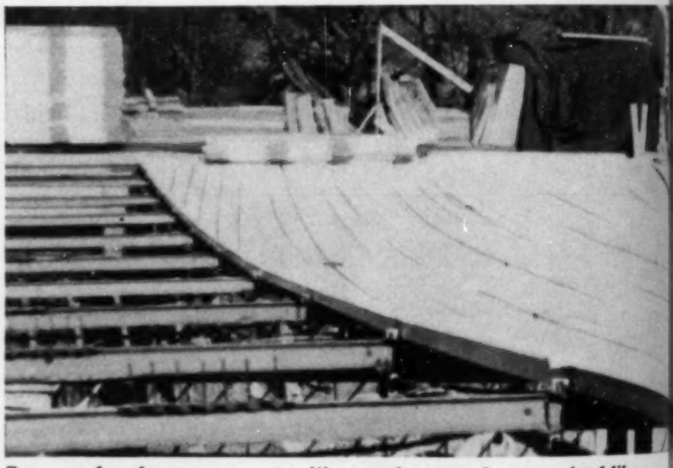
KALWALL

TRANSLUCENT

STRUCTURAL PANELS*

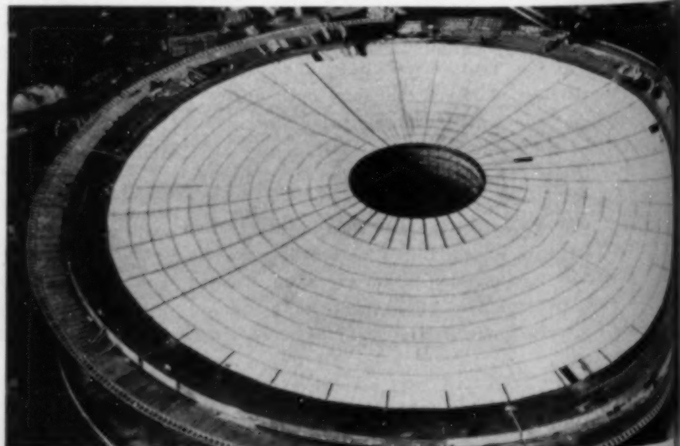
*patented and patents pending

See us in Sweets Architectural File, Section $\frac{3C}{KA}$



Support for the enormous pavilion roof comes from a wheel-like network of cables to which steel purlins are fastened. Kalwall panels span the 10 feet between purlins. The Kalwall joint system is developed to remain weather tight under the flexible conditions designed in such a cable structure.

Over 2000 translucent panels make up the circular translucent pavilion roof. Eighty percent of the total area is covered by 4'x10'x2¾" standard Kalwall panels. Their light weight made it possible to airlift them to Brussels from the Kalwall plant in Manchester, New Hampshire.



million of work in his own office was delayed until terms of the new code were known.

Perhaps the most controversial item in the new zoning code is the stricter limit on large buildings in Washington's downtown area. The new provisions are about 20 per cent stricter, in terms of gross building area allowable, than under the old code, but not so strict as Lewis had called for in his first recommendations. If a building is located on a street 110 feet or more wide (e.g., Pennsylvania or Connecticut Avenues), it may have a total gross floor space ten times the area of the building lot itself. If the street is less than 110 feet wide, the gross floor space may be only 8.5 times as big as the building lot. Lewis had recommended a maximum gross floor area of only seven times the size of the building lot.

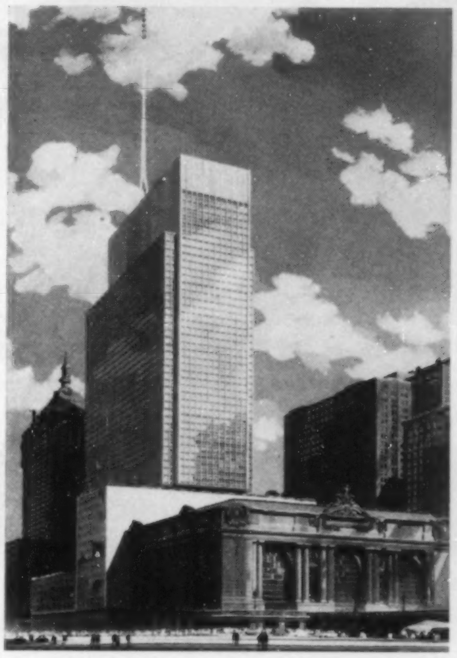
Height limits were not changed, because Washington's building height limits were originally set by an act of Congress in 1910. This provided a maximum height of 130 feet, and the new code allows this height only if the building is set back from the sidewalk. If not, a limit of 110 feet is imposed.

One area that was exempted from the new zoning regulations—besides all federally owned land which is automatically exempt but which usually conforms to such regulations—is the urban renewal area of Southwest Washington. The reason for this is that all of the area's land use is already determined by the District Commissioners under approved urban renewal plans, and is therefore legally considered under control of the commissioners themselves.

Bridgeport mansion to be razed, says mayor

Another battle to save a significant piece of American architecture was lost last month, when Mayor Samuel J. Tedesco, of Bridgeport, Connecticut, announced plans to raze the 112-year-old Harral-Wheeler mansion in that city (see page 100). Tedesco had pledged to save the house, which was designed by famed Architect Alexander Jackson Davis, in his mayoralty campaign last fall. But when the city's Common Council voted down a resolution to make the mansion a historical site and private agencies had not raised funds to restore and maintain the building, Tedesco decided to go ahead with plans to destroy the mansion. The city owns the land on which it stands, and plans to build a new City Hall and civic center there, although Tedesco did say that the decision to raze the mansion did not indicate "a quick resumption of civic center planning."

Grand Central site for largest office building



"The largest commercial building in the world" is the billing being given the $100 million, 50-story office building that was proposed last month for a site right behind Grand Central Terminal in mid-Manhattan. Builder Erwin S. Wolfson and his associates, Herbert and Stuart Scheftel and Alfred Burger, who own and operate theaters and other properties throughout the U.S., have reached an agreement with the two railroads—the New York Central and the New York, New Haven & Hartford—that own the property. Wolfson's group would pay about $1¼ million a year for a lease that, with renewals, runs 80 years.

FABIAN BACHRACH

WOLFSON

The building will have a total net rentable area of about 2.5 million square feet, and an over-all area of about 3 million, putting it well beyond the Empire State Building (1.6 million square feet) and the Chase Manhattan Bank building, now under construction (1.7 million square feet) in rentable space. Architects Emery Roth & Sons have designed a towering slab of glass and aluminum, featuring an aluminum-glass frame for the existing Grand Central terminal itself, which will not be razed. The Grand Central office building, behind the terminal, will be torn down, starting some time early next year, to make way for the new building.

The building announced last month will be pretty much the same one originally proposed by Wolfson four years ago, only to have Realtor William Zeckendorf come forward with a counterproposal to build an 80-story building with 4.8 million square feet of space. Zeckendorf's offer impressed the New York Central's late President Robert R. Young, who held up on Wolfson's scheme, but Zeckendorf's plan never got beyond the drawing boards.

The proposed building will house three legitimate theaters, restaurants, and a 2,000-car parking garage covering four levels. The building will be built by Wolfson's Diesel Construction Co., which is expected to start construction by 1960, complete the building by late 1961.

AIA announces five First Honor Awards

Two schools, an office building, a factory and a retail store were the winners of the 1958 First Honor Awards of the American Institute of Architects. The schools were designed by San Francisco Architect Mario J. Ciampi (FORUM, May 1958); the office was the Connecticut General Life Insurance Co. building at Bloomfield, Connecticut by Skidmore, Owings & Merrill (FORUM, September 1957); the factory was the Pasadena, California pharmaceutical plant for Stuart Company, designed by Edward D. Stone (FORUM, April 1958), and a specialty shop in Palm Springs, California was designed by Pereira & Luckman of Los Angeles.

Besides the winners of First Honors, there were the following Awards of Merit: to Victor Lundy; Thornton Ladd; Desmond & Davis; Richard Dorman & Associates; Smith & Williams; Mithun & Nesland; Curtis & Davis & Associates; Edward D. Stone; and Pereira & Luckman.

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THE RAYMOND
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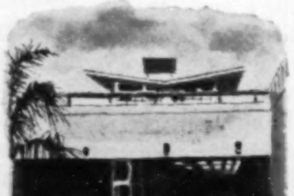
DETROIT CITY - COUNTY BLDG.
ON RAYMOND FOUNDATIONS



TUNNEL, HAVANA, CUBA
CONSTRUCTED BY RAYMOND

JEFFERSON MEMORIAL, WASHINGTON, D. C.
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CANIMAR RIVER BRIDGE, CUBA
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The reason for the change is quite simple. In a word, it's *progress.* When the Raymond Concrete Pile Company was first formed on January 27, 1897, we pioneered the installation of cast-in-place concrete pile foundations in this country only. The company name clearly defined our services. During a span of 61 years, the picture has changed, however. While today we are still the leading specialists in providing all types of foundations for the structures of America, we have expanded our overseas operations considerably. Outside the U.S. we offer *complete* construction services. Our experience abroad includes the construction of air bases, bridges, highways, dams, housing developments and harbor facilities—in fact, every conceivable type of installation. Therefore, to more accurately describe the global scope of our activities, Raymond International Inc. became the new corporate name as of April 2nd. In this country, we will continue to operate under the name, Raymond Concrete Pile Company, even though it will be a Division of Raymond International Inc. A few of our typical projects are pictured below. Under the blue banner of Raymond International Inc., the subsidiaries and divisions listed opposite will continue to serve you with the most modern materials and methods.

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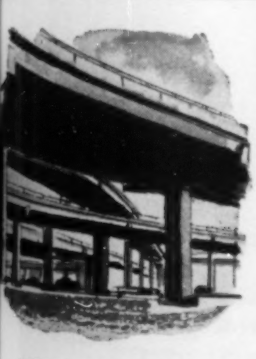
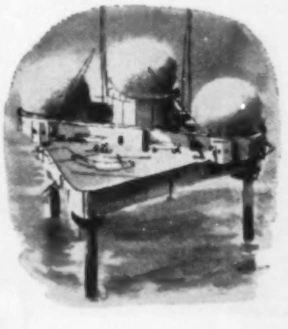
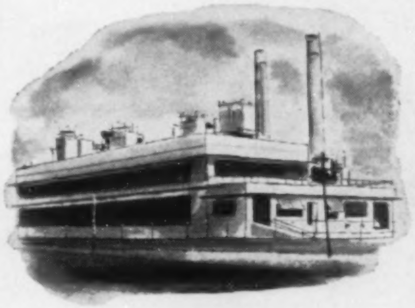


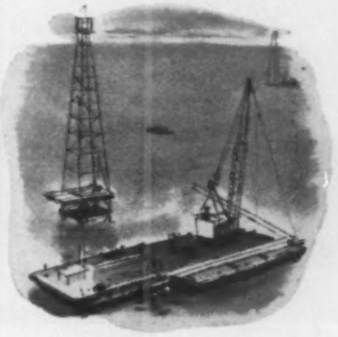
FREEWAY, SAN FRANCISCO ON RAYMOND FOUNDATIONS



TEXAS TOWER NO. 1, CONSTRUCTED BY RAYMOND IN A JOINT VENTURE



POWER HOUSE, PUERTO RICO CONSTRUCTED BY RAYMOND



DERRICK BASES, VENEZUELA CONSTRUCTED BY RAYMOND

1150 LAKE SHORE DRIVE

ARCHITECTS: *Hausner & Macsai*
CONTRACTORS: *Crane Construction Co.*

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PRINCESS PANELYTE

A glance at the clean, simple, functional design of 1150 Lake Shore Drive Apartments, Chicago, tells you why the architects and builders chose *Princess* Panelyte laminated plastic for the work surfaces in their kitchens. Its attractive pattern was styled by one of America's leading designers, pre-tested as to consumer acceptance with housewives across the nation.

Panelyte is available in a wide selection of 66 colors and patterns which include widely acclaimed *Galaxy*, exclusive *Coppertone*, marble effects and wood grains.

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Panelyte's *Princess* pattern makes work surfaces look larger because of its neat, uncluttered look . . . and there are *ten* decorator colors from which to choose.

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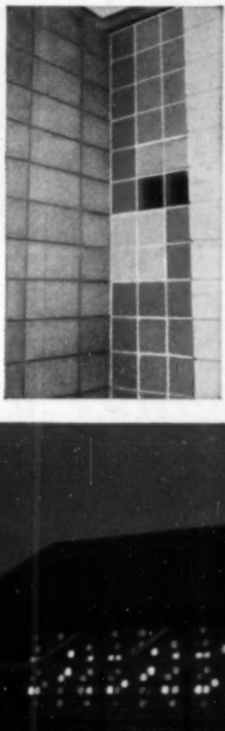
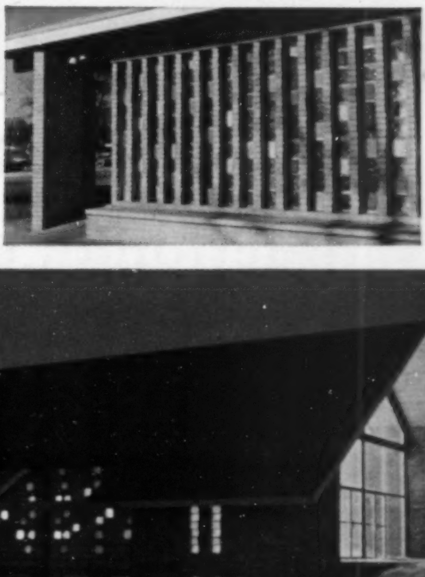
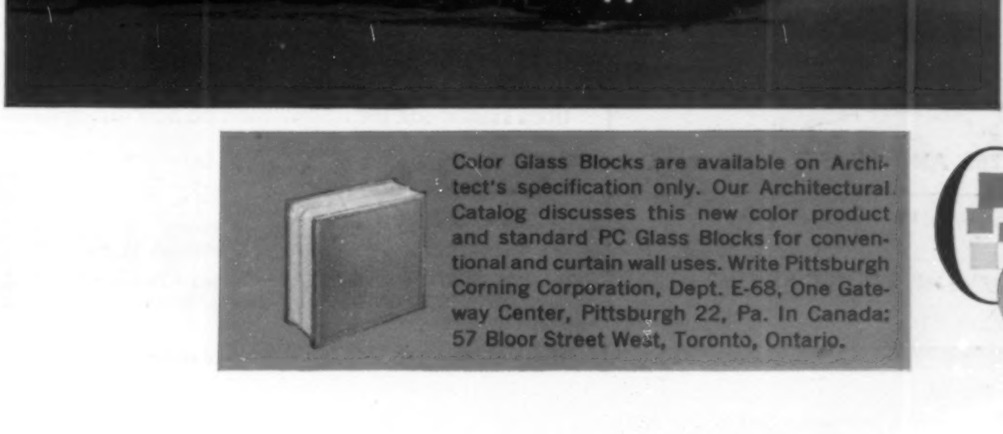
Multi-colored jewels set at random in the walls of a church. Gay, colorful exterior panels in a commercial building. Strategically placed color accents relieve monotony, provide distinction. Versatility of use is the increasing acceptance story of Color Glass Blocks, a product of Pittsburgh Corning.







Color Glass Blocks are available on Architect's specification only. Our Architectural Catalog discusses this new color product and standard PC Glass Blocks for conventional and curtain wall uses. Write Pittsburgh Corning Corporation, Dept. E-68, One Gateway Center, Pittsburgh 22, Pa. In Canada: 57 Bloor Street West, Toronto, Ontario.

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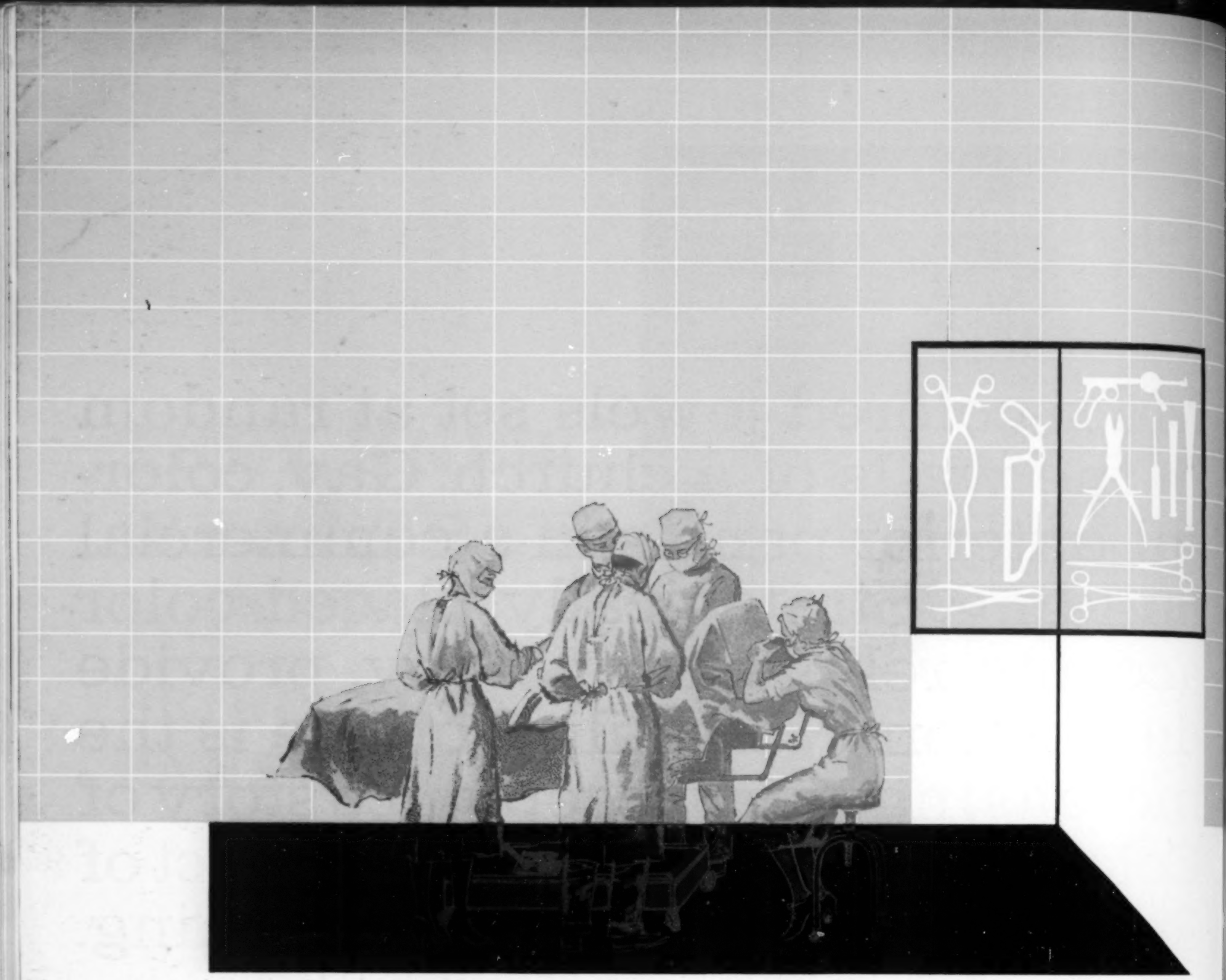

The "8W" Series is shown above in modern stretcher stack-bond construction. These units as well as the sizes listed below can also be laid in conventional center bond for attractive interior layouts.

Completely functional, ocular green walls of Natco Ceramic Glaze Vitritile

Now you can combine the ultimate in cleanliness with a range of smooth colorful surfaces that establish the precise brightness ratio most suitable for long hours of demanding visual work.

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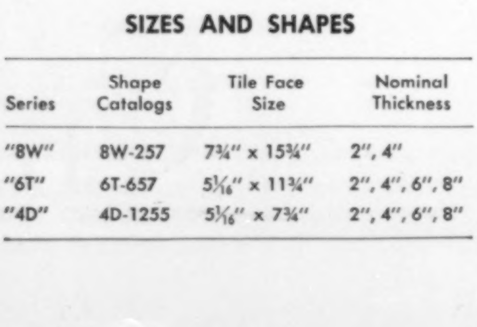

SIZES AND SHAPES

Series	Shape Catalogs	Tile Face Size	Nominal Thickness
"8W"	8W-257	7¾" x 15¾"	2", 4"
"6T"	6T-657	5 1/16" x 11¾"	2", 4", 6", 8"
"4D"	4D-1255	5 1/16" x 7¾"	2", 4", 6", 8"

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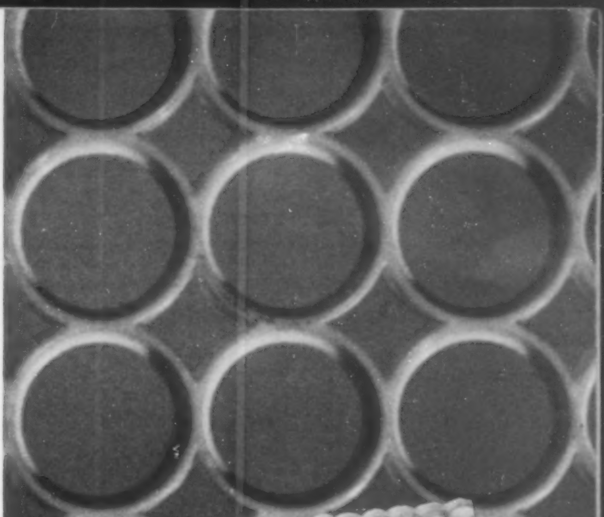

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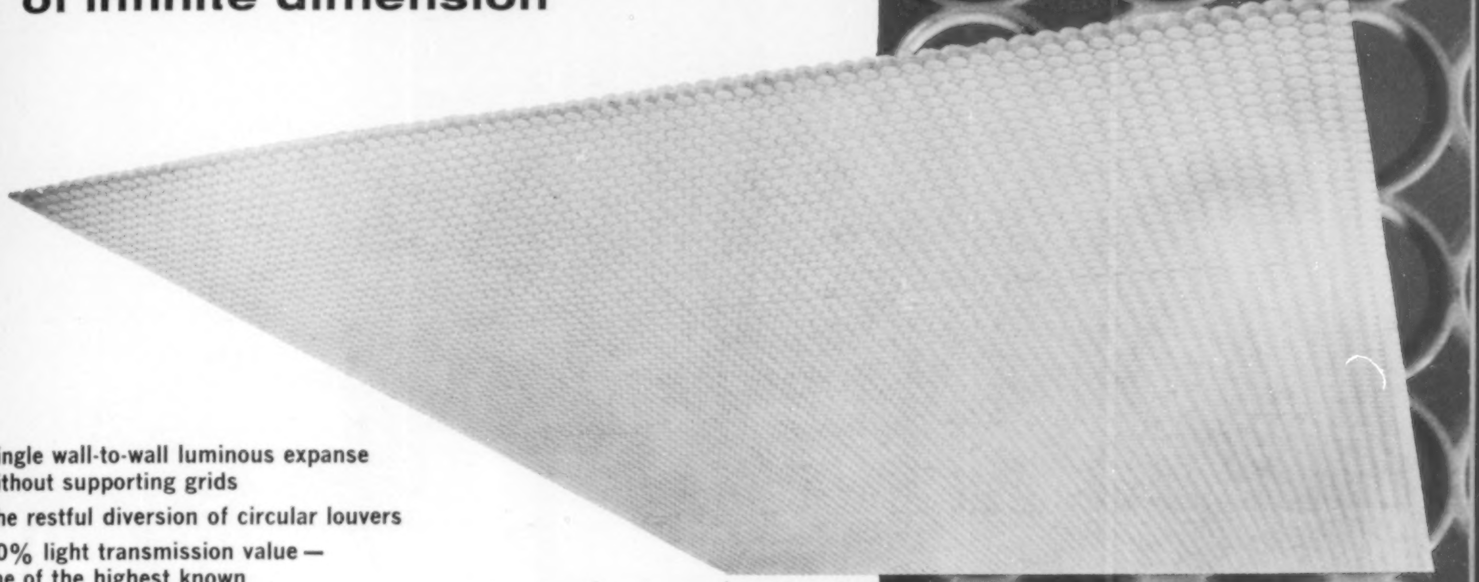

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- 80% light transmission value — one of the highest known
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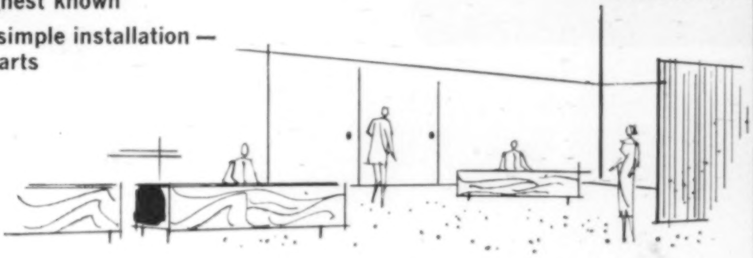
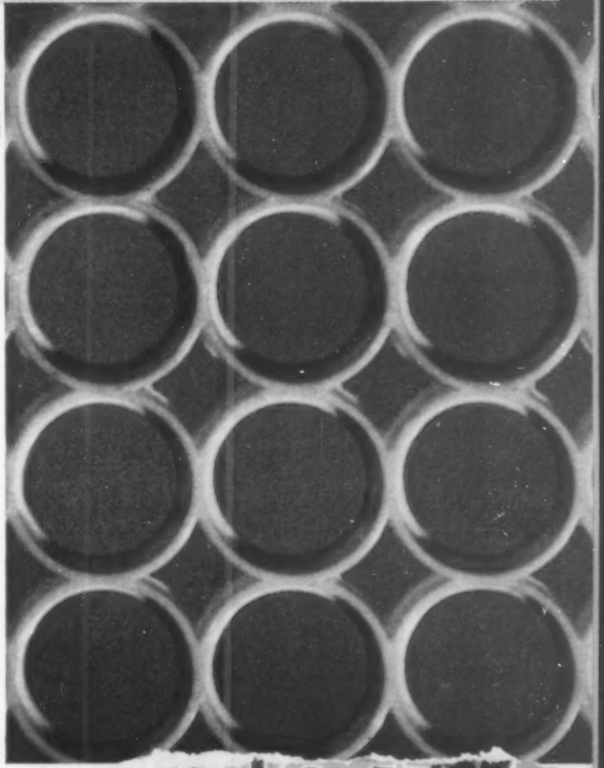
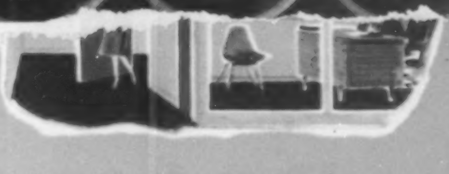




INFINILITE WAS DEVISED as the only feasible architectural lighting solution for the central core areas of the new diamond-shaped Union Oil Center in Los Angeles, Pereira & Luckman, Architects. Today INFINILITE is installed in many of America's foremost new buildings. 24 x 25 inch interlocking panels snap on with no over-lapping double edges or seams.

Manufactured from new light stabilized plastic, INFINILITE is first with Drop-Strip Fixture with V.T.S. Diffuser to completely eliminate direct view of lamps. We invite your inquiry.



Here is economical space division complete with movability, ready access to utilities and easy, low-cost maintenance of the lifetime finish.

∞ INFINILITE*

A product of INTEGRATED CEILINGS, INC.

* PAT. PENDING – T.M.

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FOUR STORIES ABOUT DUNHAM-BUSH

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'CRV' ROOM AIR CONDITIONER

ARCHITECT: Damon, Worley, Samuels and Associates
CONSULTING ENGINEER: Superior Engineering Co.
CONTRACTOR: Reliance Heating and Air Conditioning Co.

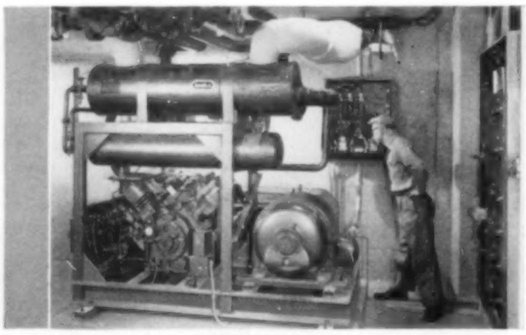
1 DUNHAM-BUSH COOLING **2 DUNHAM-BUSH HEATING**
3 BRUNNER COMPRESSORS **4 HEAT-X PACKAGE CHILLER**

The high quality heating and cooling equipment which services all four stories of the handsome new Suburban West office building, Cleveland, Ohio, is a physical expression of the Dunham-Bush 'one source—one responsibility' reputation.

A 75 Ton Heat-X Package Chiller, efficiently assisted by a rugged Brunner Compressor, supplies chilled water to the air conditioning system. 130 Dunham-Bush CRV Remote Air Conditioning units provide quiet, year 'round air conditioning of the building. 20 Dunham-Bush Recessed Convectors satisfy the heating demands.

A complete climatic network of heating, cooling, air conditioning, and air dehumidification by Dunham-Bush, the name that means "the best".

RECESSED CONVECTORS FOR HEATING



HEAT-X PACKAGED CHILLER WITH BRUNNER COMPRESSOR

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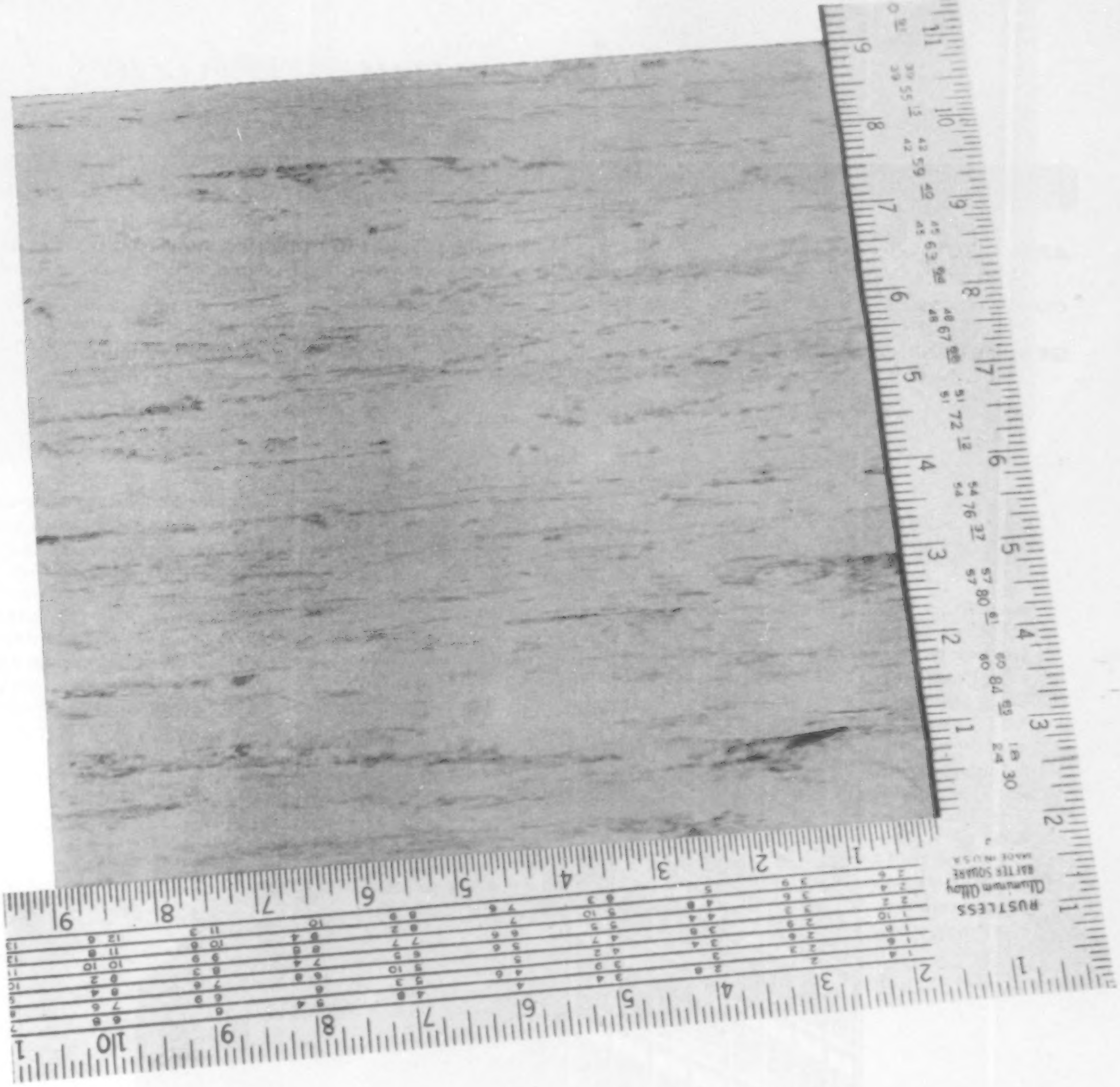

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Changing climatic and temperature conditions won't affect dimensionally-stable Vina-Lux – "Micro-cut" to a new high standard of dimensional precision. Vina-Lux floors continue to give trouble-free service long after ordinary resilient tile must be replaced.

Vina-Lux is a versatile tile that solves many floor problems. It's greaseproof and durable – slip-safe and easy to maintain. Solve *your* floor problems with this outstanding vinyl asbestos tile. Available in 31 colors and 4 styles. Samples are yours without obligation.

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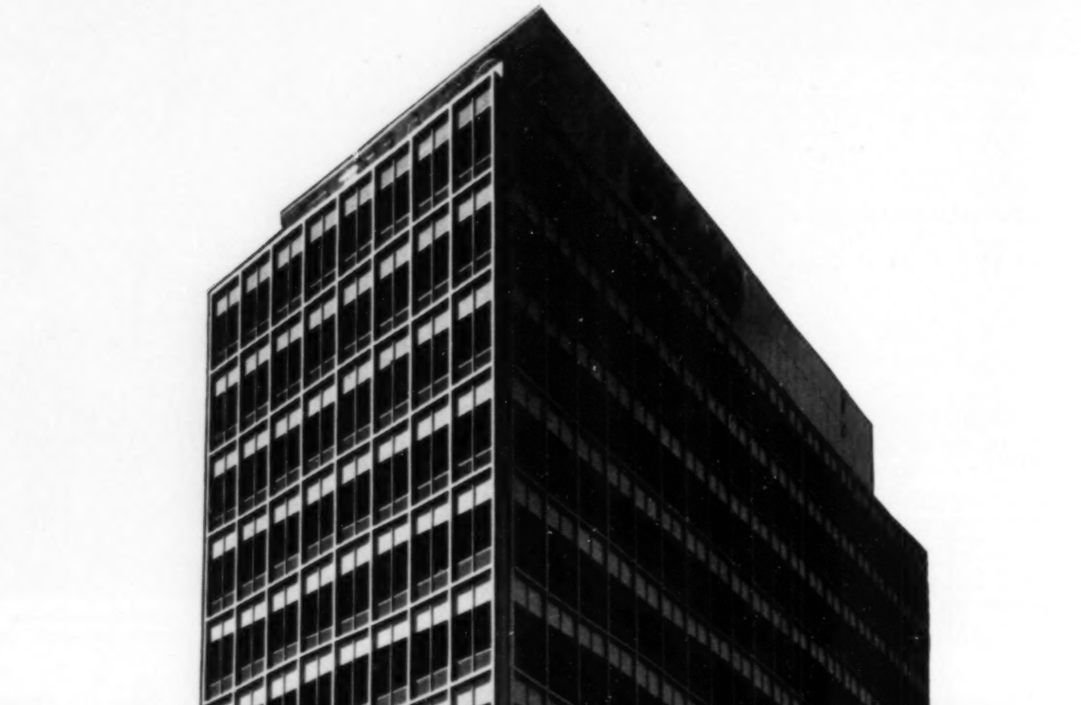
... aluminum achieves!

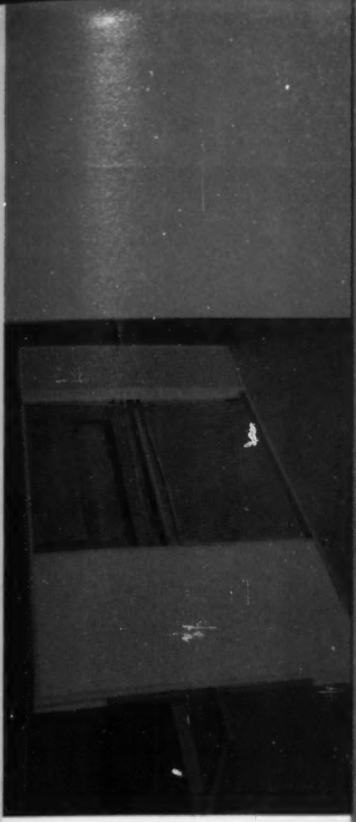
ARCHITECT:
Welton Becket,F.A.I.A., and Associates

CURTAIN WALL FABRICATOR-ERECTOR:
Ador Corporoation

GENERAL CONTRACTOR:
Del E. Webb Construction Co.

For The Texas Company's new Pacific Coast headquarters on Wilshire Boulevard in Los Angeles, the architect specified a curtain wall system unique in the area: a custom-designed grid type panel assembly with aluminum extrusions to create equally dominant horizontal and vertical lines.





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Horizontal exterior members are attached to grids at the site prior to installation. Vertical mullions are attached after the grid system is installed. The Kaiser Aluminum extrusions, including snap-on glazing members, cover all fasteners throughout the assembly. Design of the massive aluminum mullions facilitates drainage and effective use of weatherproofing sealants and gaskets.

For both the architect and the fabricator, aluminum is an invitation to achievement

With more useful properties than any other construction material, it offers the architect almost unlimited opportunity for expression. It is light and strong, resists corrosion, reflects light and heat, offers permanent natural beauty with minimum maintenance.

And because it can be formed by any known method and accepts such a variety of mechanical or chemical finishes, it gives the fabricator unsurpassed opportunity for creative contribution to building construction.

Kaiser Aluminum Architectural Representatives are working closely with architects and fabricators throughout the country to help apply these advantages of aluminum to architecture. Their service is immediately available without obligation to any architect or fabricator who is interested in the virtually unlimited opportunities that aluminum offers.

For immediate service or further information, please contact the Kaiser Aluminum Sales Office listed in your telephone directory.

Kaiser Aluminum & Chemical Sales, Inc., *Executive Office,* Kaiser Bldg., Oakland 12, Calif.; *General Sales Office,* Palmolive Bldg., Chicago 11, Ill.

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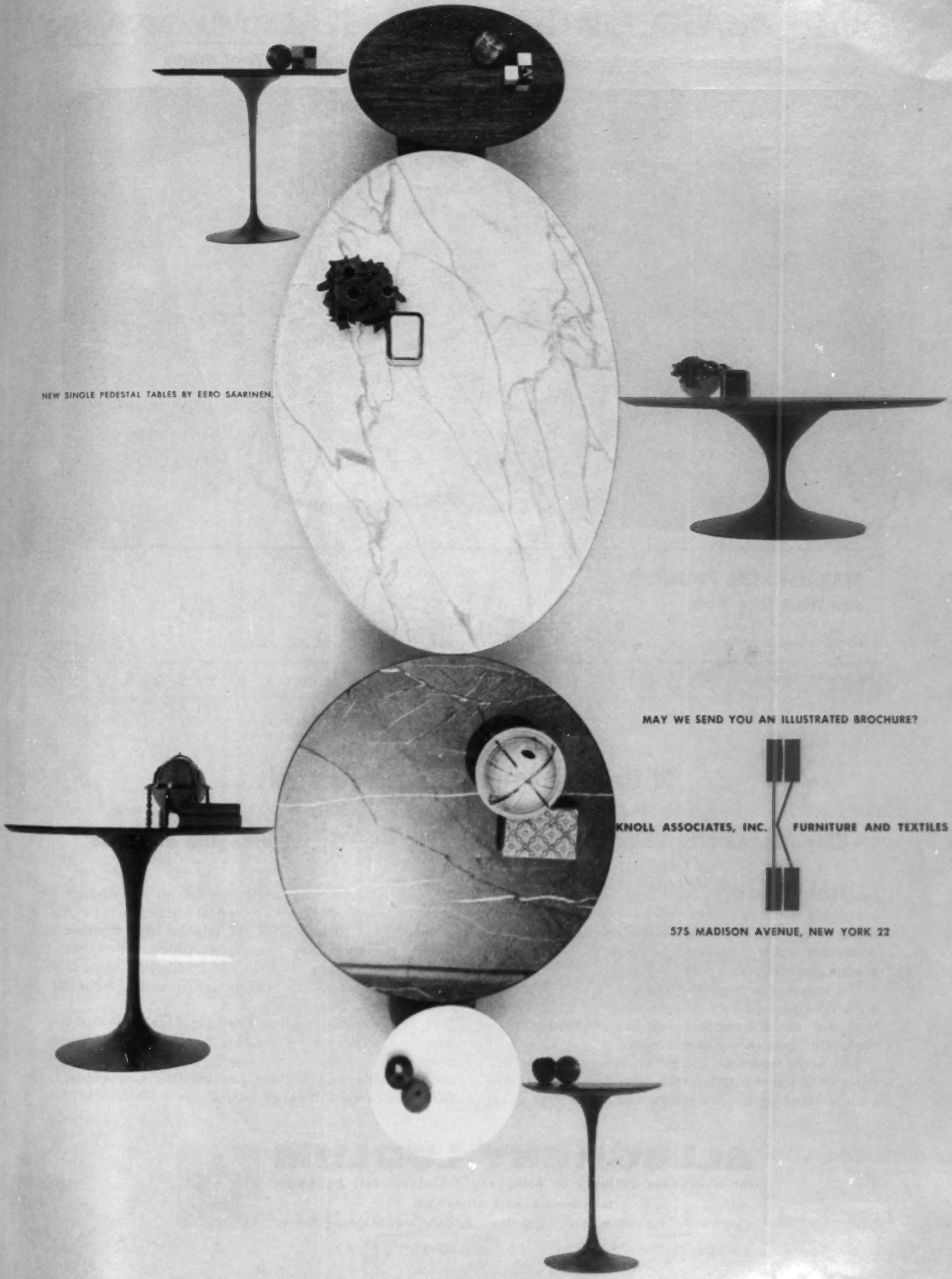

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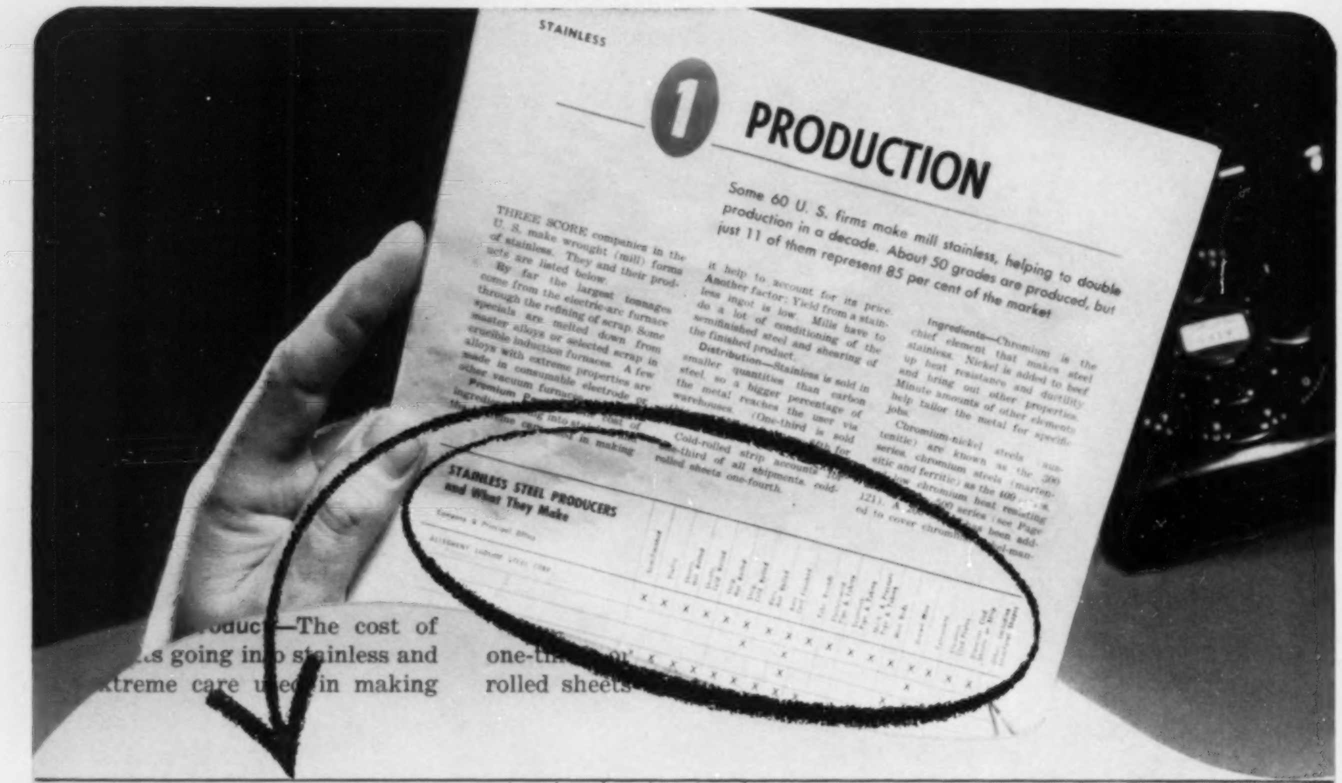

STAINLESS

1 PRODUCTION

Some 60 U. S. firms make mill stainless, helping to double production in a decade. About 50 grades are produced, but just 11 of them represent 85 per cent of the market

STAINLESS STEEL PRODUCERS and What They Make Company & Principal Office	Semifinished	Plates	Sheets, Hot Rolled	Sheets, Cold Rolled	Strip, Hot Rolled	Strip, Cold Rolled	Bars, Hot Rolled	Bars, Cold Finished	Tube Rounds	Electricweld Pipe & Tubing	Seamless Pipe & Tubing	Mech. & Pressure Pipe & Tubing	Wire Rods	Drawn Wire	Extrusions	Stainless Clad Plates	Stainless Clad Sheets or Strip	Other, Including Structural Shapes
ALLEGHENY LUDLUM STEEL CORP. Pittsburgh	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
						X		X						X				

Of the 60 producers of stainless steel...

only ALLEGHENY LUDLUM makes all sizes, shapes, finishes and analyses

In its November 4, 1957 issue, STEEL magazine published a complete run-down on the stainless steel industry. This article reveals that *only Allegheny Ludlum*, of the 60 some companies making stainless, produces all sizes, shapes, finishes and analyses.

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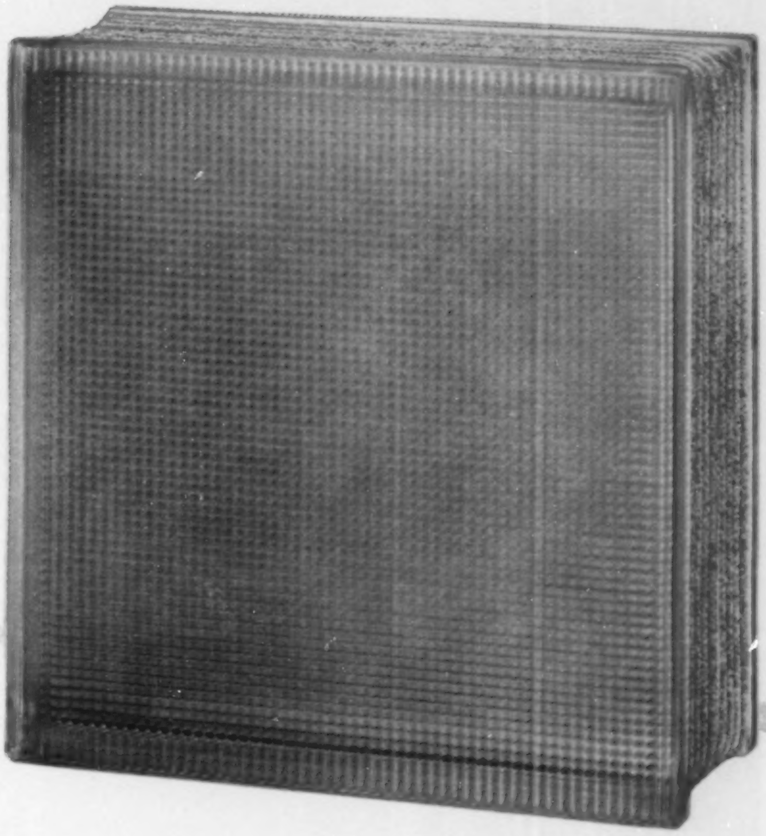

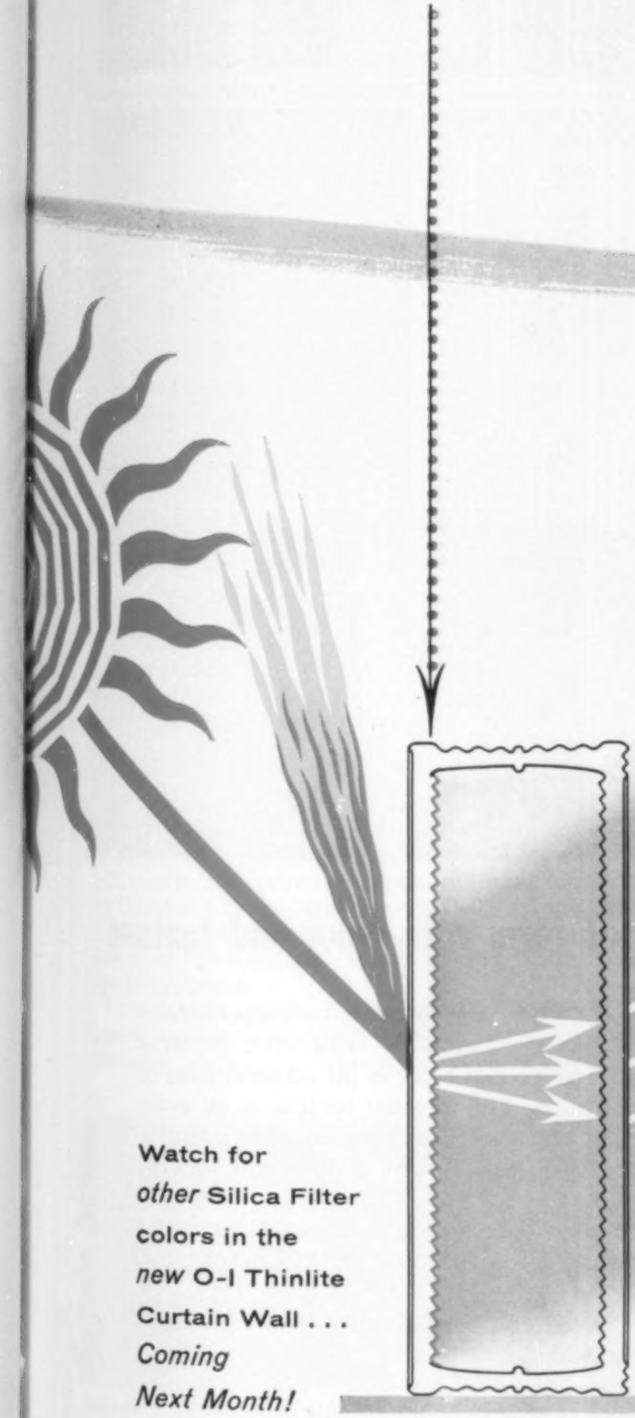

Solar-Selecting Glass Block, now available in cool Silica Filter/Green, offer unique design possibilities . . . transmit *cool* light rays yet reflect hot sunlight. The permanent Silica Filter finish applied to the *inner* surface gives the glass block excellent diffusing characteristics. Available in 8″ and 12″ sizes.

O-I Solar-Selecting Glass Block provide selective light transmission through their mirror-like reflection of the hot, bright light from the sun, while transmitting light from the ground and clear sky. They provide the lowest brightness and solar heat transmission per unit of transmitted daylight of any daylighting medium available.

For complete technical data, write Kimble Glass Company, subsidiary of Owens-Illinois, Dept. AF-6, Toledo 1, Ohio.

** Patent applied for.*

Watch for *other* Silica Filter colors in the *new* O-I Thinlite Curtain Wall . . . *Coming Next Month!*

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Golden Grillwork of Alcoa Aluminum blends beauty of form with color and texture

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PIX

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GENERAL CONTRACTOR: Arkin Construction Company, Inc., Miami Beach, Florida
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All three elements of fine design—form, color and texture—are masterfully combined in this golden grillwork of Alcoa® Aluminum. Geometric patterns add depth and variety to the façade. The golden color is an integral part of the metal surface . . . for lasting brightness. The unusual texture is an everlasting invitation to the eye. Interiors and exteriors take on new splendor with the limitless form, color and texture possibilities of this new use for Alcoa Aluminum . . . the architect's metal.

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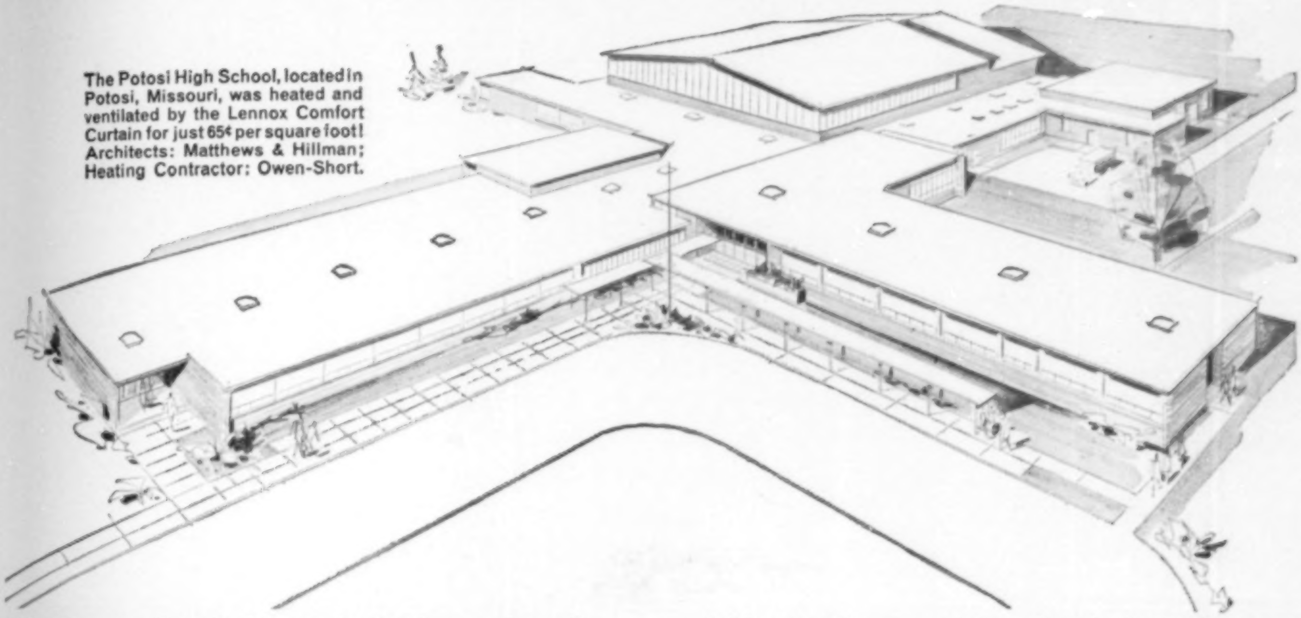
Potosi school gets the finest in fresh air heating and ventilating—installed complete with automatic controls—for just 65¢ per square foot!



The Potosi High School, located in Potosi, Missouri, was heated and ventilated by the Lennox Comfort Curtain for just 65¢ per square foot! Architects: Matthews & Hillman; Heating Contractor: Owen-Short.

New Lennox Comfort Curtain System automatically draws in fresh air from outside . . . warms, cleans and circulates air quietly and evenly throughout the classroom!

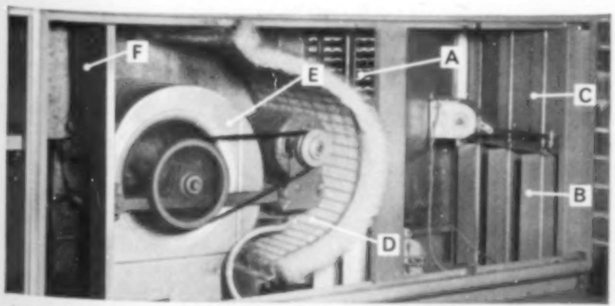
Hard to believe, isn't it?—that after all these years a new and better fresh air heating and ventilating system can be installed *for a fraction of the cost* of systems used previously. Yet it's true! 65¢ per square foot was the *complete* cost of the Lennox Comfort Curtain System in the Potosi, Missouri High School. Including fully automatic controls, ductwork, labor—everything!

Of course, 65¢ per square foot is unusually low, even for the Comfort Curtain. But costs of $1.03 in Indiana, $1.15 in Montana, and $1.12 in South Dakota are *usual and typical* of the amazing savings offered by the Lennox Comfort Curtain.

How is this possible? The Lennox Comfort Curtain System applies to schools the sound, tested principles of warm air heating. It eliminates expensive pipes, boilers and chimneys. Moreover, it saves hundreds of dollars per classroom per year *every* year it is in use. Fuel is consumed only when heat is required, maintenance is amazingly simple and low-cost. Yet—and this is important—the Lennox Comfort Curtain System does a far better job than costlier systems used previously.

It provides a full, even flow of air throughout the entire length of the exposed classroom wall. It is amazingly quiet. And it holds room temperatures to a variance of six-tenths of one degree, circulates air continuously for perfect distribution, introduces a continuous supply of fresh air into the daytime heating cycle, and provides *tons* of needed fresh air cooling without the cost of refrigeration!

Get full information on this new low-cost system of classroom heating and ventilating. Send coupon below for free booklet, today!



Lennox Air Processing Unit introduces fresh air in adjustable volumes (A); transmits warm air (B) from adjacent or remote heating unit; continuously recirculates indoor air (C); filters air clean (D). Lennox' exclusive floating blower (E) and acoustical lining (F) assure a degree of quietness never before achieved.

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Gentlemen: Please send me your free booklet on the Comfort Curtain system of classroom heating and ventilating.

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A typical installation of *galvanized steel pipe* drainage and vent lines in New York's Coliseum.

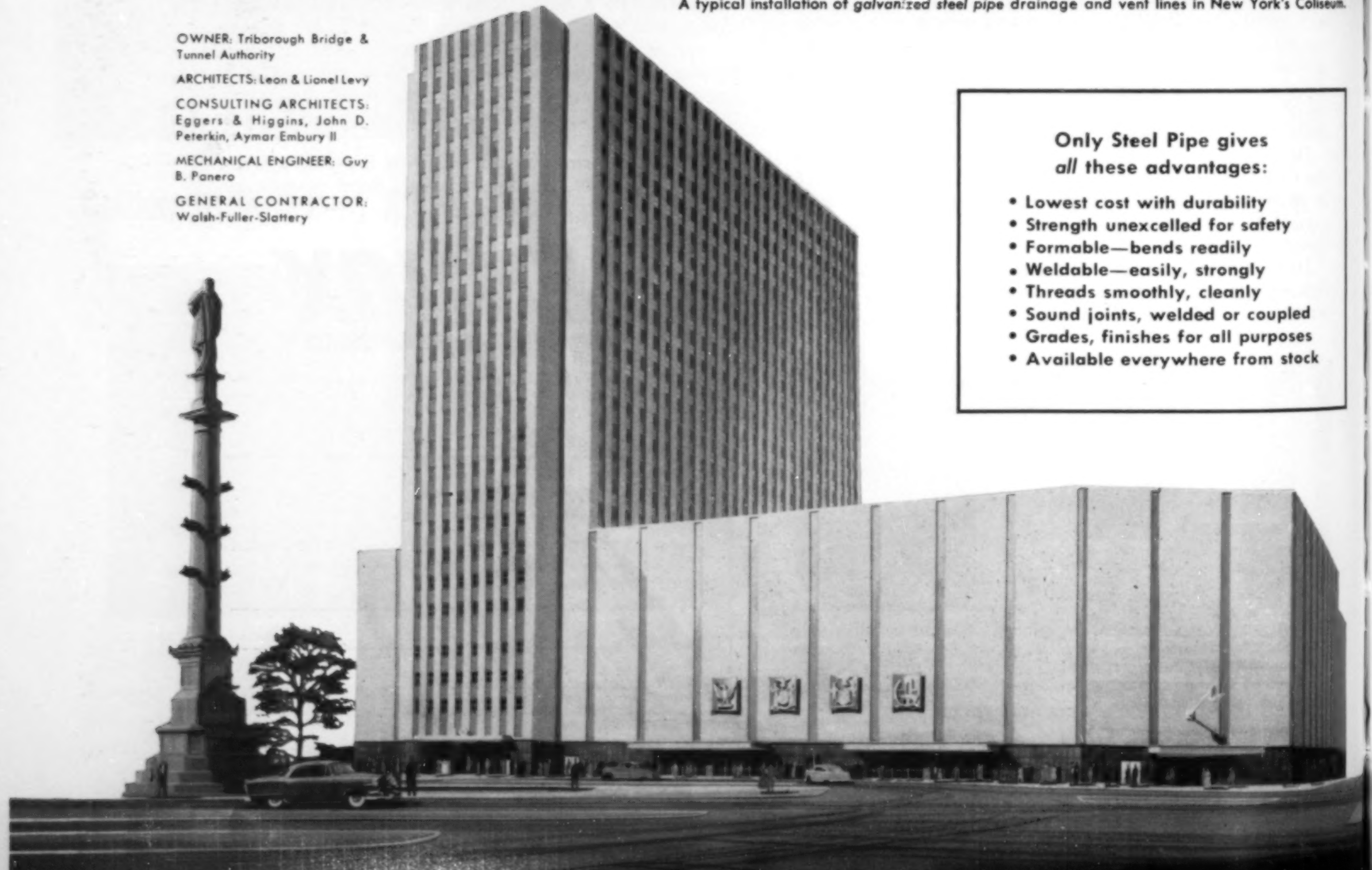
OWNER: Triborough Bridge & Tunnel Authority

ARCHITECTS: Leon & Lionel Levy

CONSULTING ARCHITECTS: Eggers & Higgins, John D. Peterkin, Aymar Embury II

MECHANICAL ENGINEER: Guy B. Panero

GENERAL CONTRACTOR: Walsh-Fuller-Slattery



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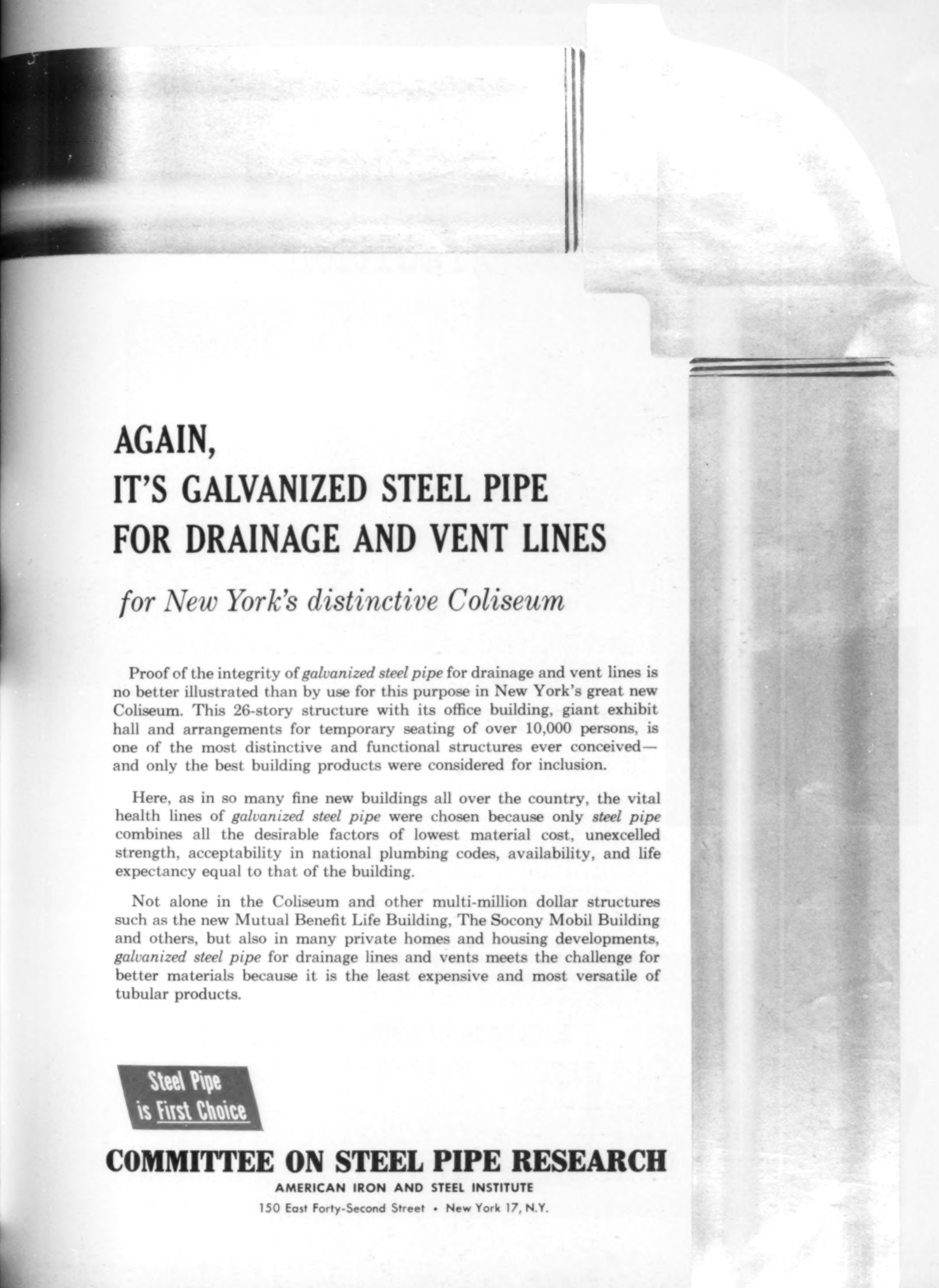

AGAIN, IT'S GALVANIZED STEEL PIPE FOR DRAINAGE AND VENT LINES

for New York's distinctive Coliseum

Proof of the integrity of *galvanized steel pipe* for drainage and vent lines is no better illustrated than by use for this purpose in New York's great new Coliseum. This 26-story structure with its office building, giant exhibit hall and arrangements for temporary seating of over 10,000 persons, is one of the most distinctive and functional structures ever conceived—and only the best building products were considered for inclusion.

Here, as in so many fine new buildings all over the country, the vital health lines of *galvanized steel pipe* were chosen because only *steel pipe* combines all the desirable factors of lowest material cost, unexcelled strength, acceptability in national plumbing codes, availability, and life expectancy equal to that of the building.

Not alone in the Coliseum and other multi-million dollar structures such as the new Mutual Benefit Life Building, The Socony Mobil Building and others, but also in many private homes and housing developments, *galvanized steel pipe* for drainage lines and vents meets the challenge for better materials because it is the least expensive and most versatile of tubular products.

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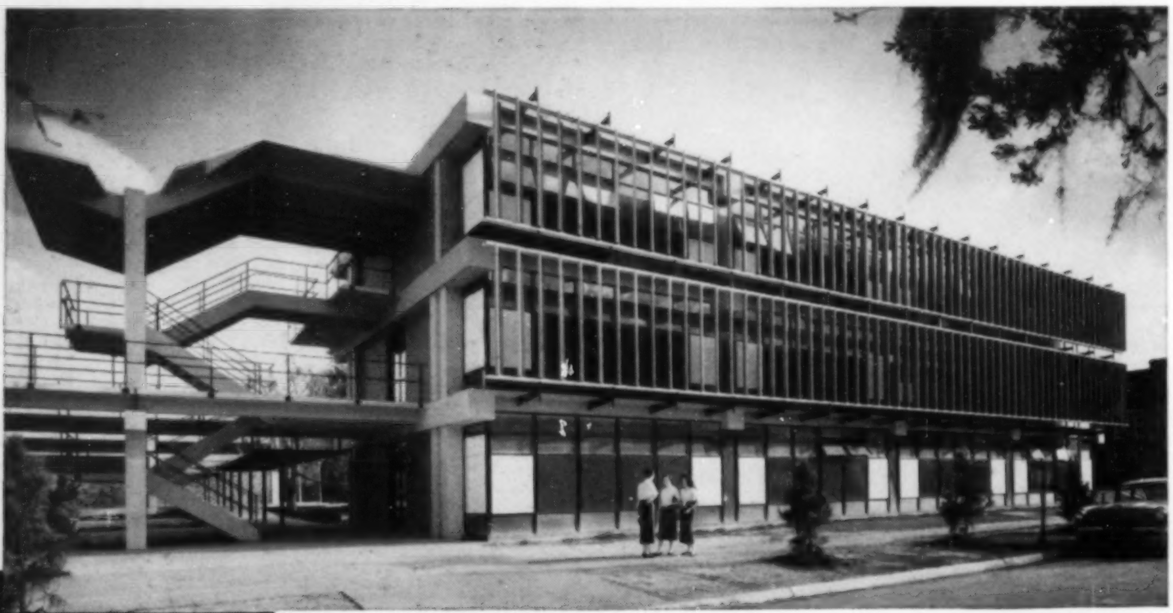
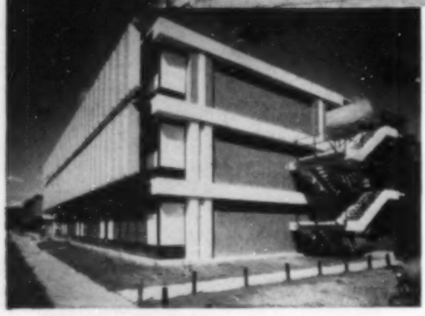
for a Fine Old Tradition





MEMORIAL STUDENT UNION
SOUTHWESTERN LOUISIANA INSTITUTE,
Lafayette, Louisiana

General Contractor:
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Architect and Engineer:
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New Orleans

Lone Star Concrete
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LAFAYETTE LUMBER COMPANY
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The Spirit of Southern Hospitality Finds Dramatic Expression in These Modern New College Campus Buildings

- Memorial Student Union strikes a note of pleasing contrast amidst academic surroundings and architecture of by-gone days.

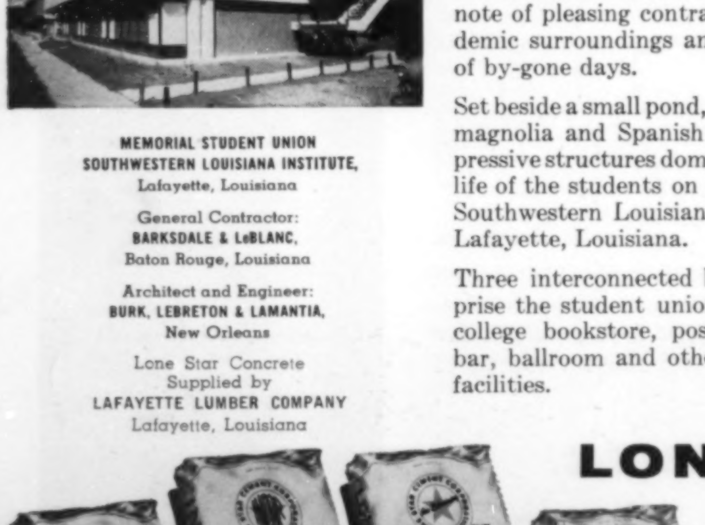
Set beside a small pond, overhung with magnolia and Spanish moss, the impressive structures dominate the social life of the students on the campus of Southwestern Louisiana Institute, in Lafayette, Louisiana.

Three interconnected buildings comprise the student union, housing the college bookstore, post-office, snack bar, ballroom and other recreational facilities.

Significantly, the structures are built with reinforced concrete to meet today's needs and the challenge posed by the generations of tomorrow.

Concrete combines great strength, economy, fire-safety and beauty in one versatile material, providing the widest possible latitude for the designer's creative skill backed up by sound construction know-how.

In these fine structures, there were 4000 barrels of Lone Star Portland Cement used. For complete dependability and assured uniform quality, use Lone Star Portland Cement.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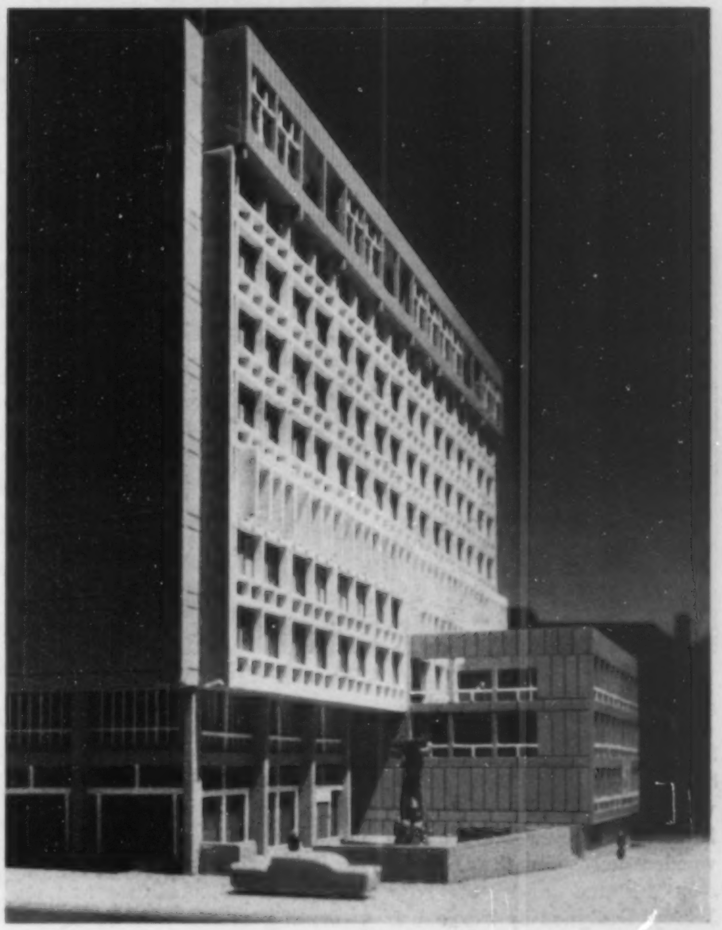
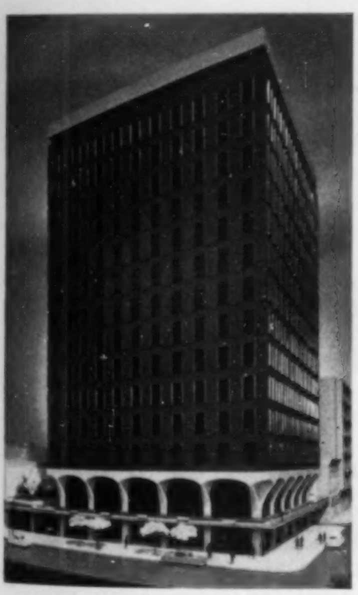
A roundup of recent and significant proposals

HARVARD SQUARE CENTER

Harvard University is currently passing its big pilgrim's hat for funds to build a $9 million business and educational center on Harvard Square. Designed by Harvard's Design School Dean, Jose Luis Sert, the ten-story, block-big structure will accommodate stores on the first two floors, a badly needed infirmary for Harvard and Radcliffe College on the next five, and faculty, administrative, and business offices on the top three. Construction: reinforced concrete frame; lattice façade of finely finished precast concrete with multicolored panels.



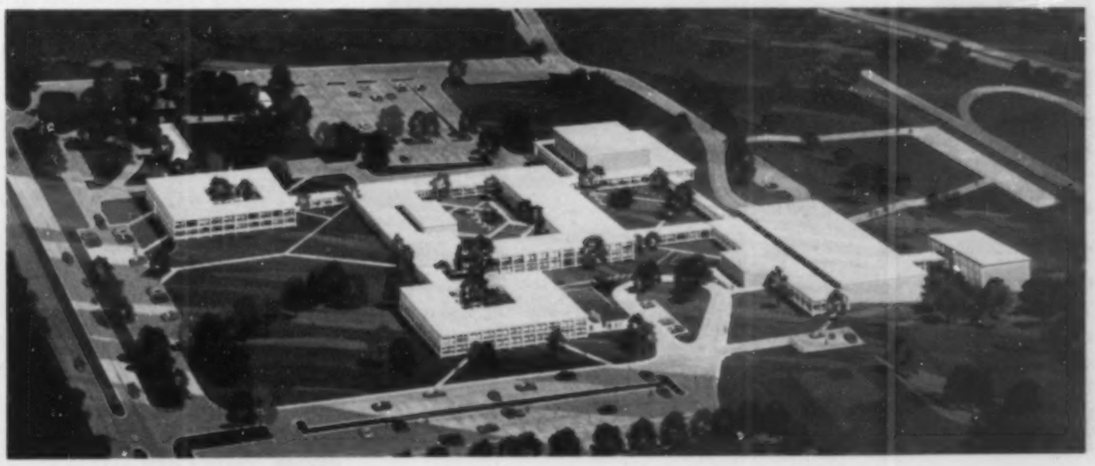
INSURANCE HEADQUARTERS

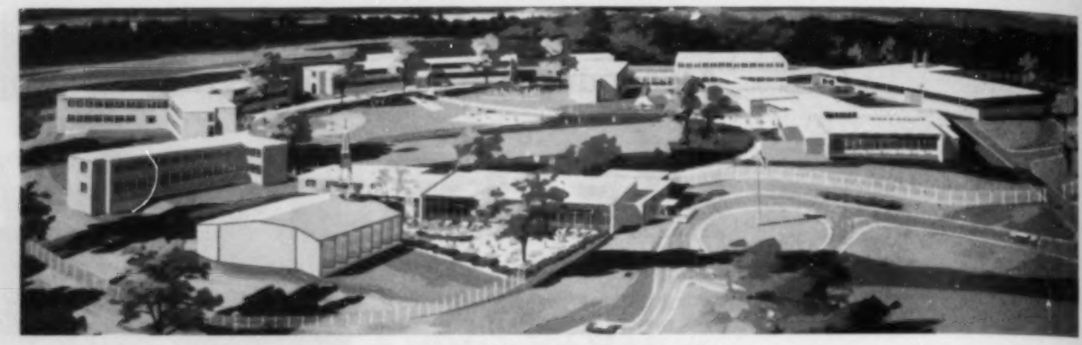


By next spring a new John Hancock building will rise 15 stories above the corner of Battery and California Streets in San Francisco. Departing from the usual all-glass pattern of Skidmore, Owings & Merrill projects, it will be of reinforced concrete faced with polished granite and studded with gray, glare-reducing windows set in bronze. The street floor will be reserved for commercial use; the second floor with its balcony-garden will house the insurance firm's western headquarters; and the 12 floors above, each offering about 10,000 square feet of office space, will be leased.

HIGH SCHOOL FOR NEW YORK SUBURB

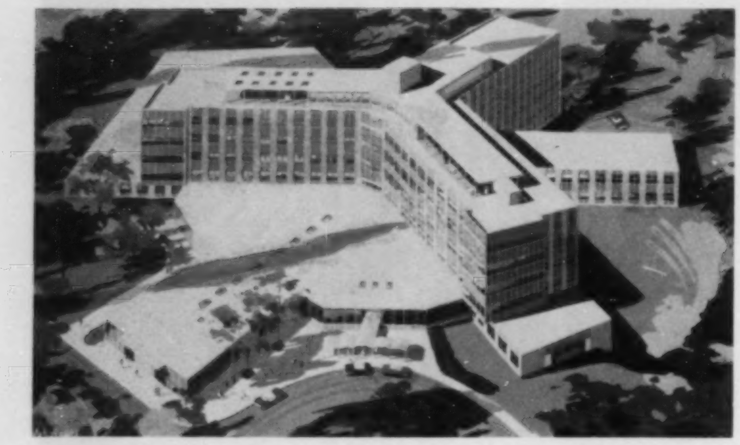
On 74 acres in suburban White Plains, New York, ground has been broken for the most costly ($9.6 million) high school in wealthy Westchester County. Two two-storied academic wings will contain classrooms and dining facilities for 1,000 students each. All six buildings on the campus, which will provide two gymnasiums, an auditorium, swimming pool, and numerous activity rooms, will be connected by enclosed walkways. The architects are Perkins & Will of White Plains.





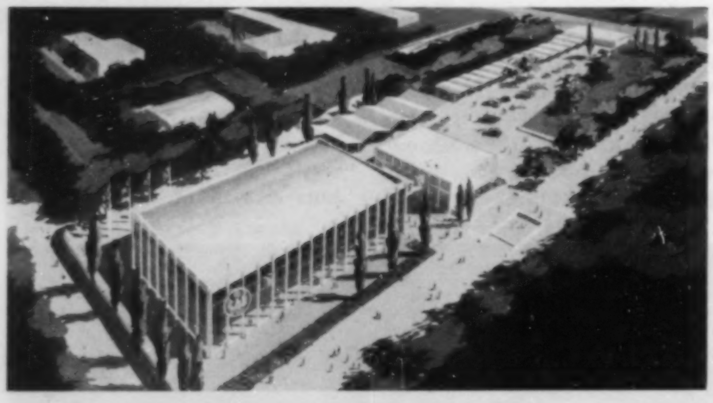
CAMPUS-TYPE PRISON IN CONNECTICUT

A state long famous for its halls of ivy, Connecticut, is about to build another campus: this one a $3½ million minimum security prison. Salmon-pink buildings enclosed only by an 8 foot wire fence will house 400 inmates. There will be no bars, and no cells. In the summer prisoners will picnic with visiting families on a flagstone terrace. The unique institution, which will include 50 private rooms for the best-behaved prisoners, is the design of La Pierre & Litchfield.



NEW JERSEY MEDICAL CENTER

St. Barnabas, Newark's oldest hospital (incorporated 1867), will move to a $10 million medical center being built on 60 wooded acres in the Livingston-Millburn area of New Jersey. Designed by Ferrenz & Taylor of Manhattan, the sprawling six-story, curtain-walled structure will have a total usable space of 360,000 square feet. At the suggestion of civil defense authorities, the hospital's laboratories and operating rooms will be on the ground floor.

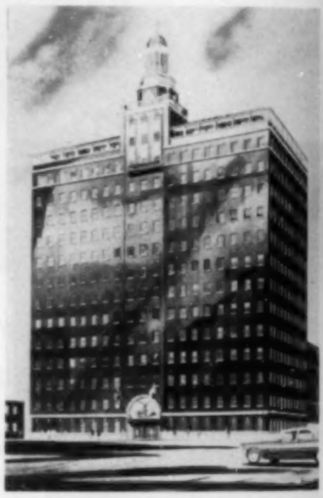


U. S. PAVILION FOR POZNAN'S TRADE FAIR

To house American goods on display at the International Trade Fair in Poznan, Poland, the U.S. Commerce Department will erect a steel-columned, 95 by 170 foot pavilion by Architect Reino Aarnio, designer of last year's pavilion for the same fair. The building will be 32 feet high, with three walls of glass and one of asbestos cement paneling. A smaller (2,960 square feet) structure of reinforced concrete will serve as a model TV studio. Project cost: $250,000.

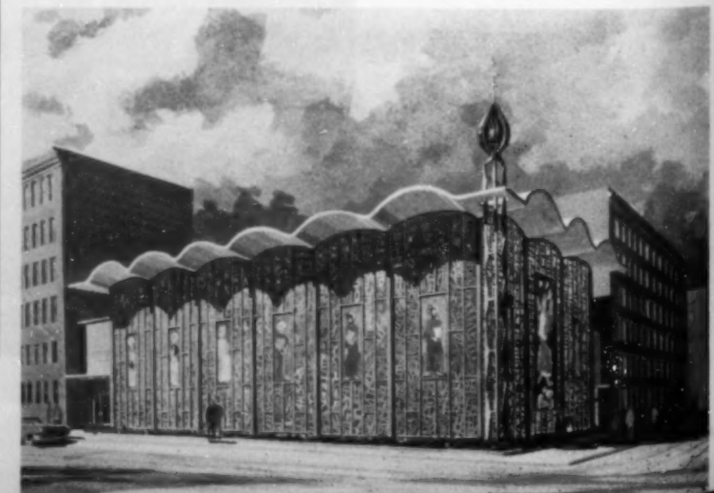
TEXAS-SIZE COLONIAL

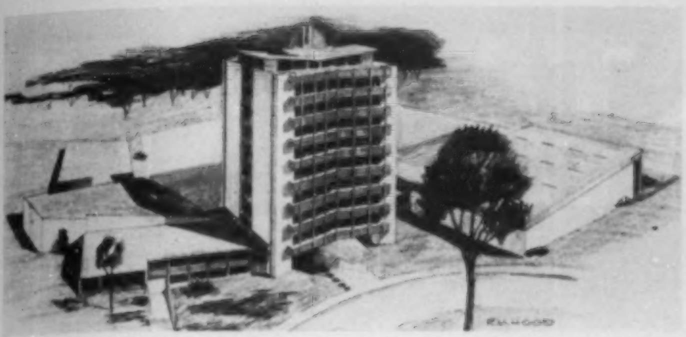
Like a Texas giant with a New England accent, the cupola-topped red brick office building at right will soon be seen on the Dallas skyline next to such modern structures as the Statler-Hilton and Southland Center. Designed by Dallas Architect Harold A. Berry for the Hartford Fire Insurance Co., the building will be Connecticut in styling from its double hung windows to its pegged floorboard, but strictly Texas in size. Height: 14 stories; gross area: more than 190,000 square feet.

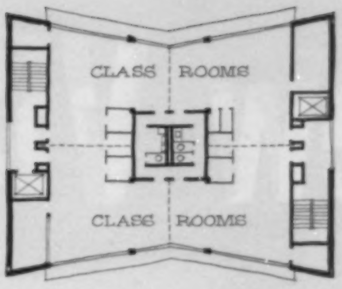


GLASS CHURCH IN DOWNTOWN MANHATTAN

A little-known branch of the Catholic Church, the Byzantine-Slavonic Rite, will soon erect New York City's first glass-clad church on the site of the old Stuyvesant mansion at the corner of 15th Street and Second Avenue. Designed by Brother Cajetan Bauman and Paul Damaz to reflect Byzantine styling, the $600,000 church as shown below will have a scalloped, reinforced concrete roof and wall panels of glass mosaic and stained glass set in concrete.

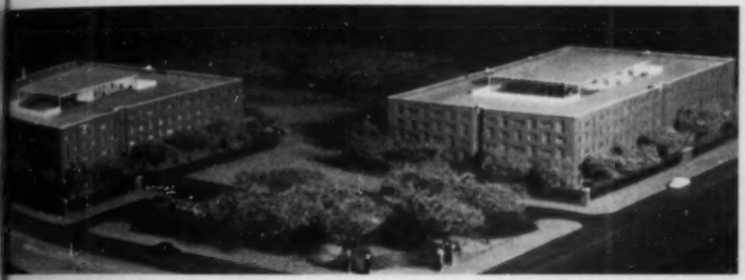






TEN-STORY PRIVATE SCHOOL

With an eye to the expanding universe and the expanding student population, Stamford, Connecticut's Daycroft School, a private elementary-secondary school with an enrollment of about 150, will build an observatory-topped, ten-story tower to house 500 prospective students. The unique $900,000 structure will be served by two elevators (see plan). Air-conditioned floors will be star-shaped (not for symbolism, but to dampen sound). Architects: Hood & Renshaw of Stamford.



UNIVERSITY OF PENNSYLVANIA WOMEN'S DORMITORY

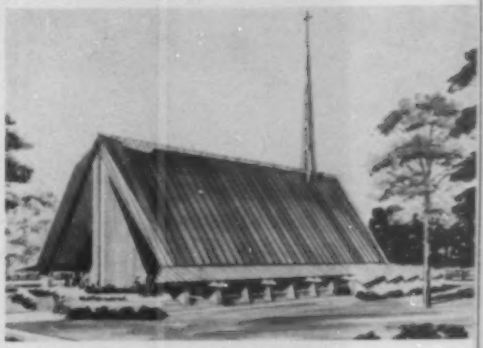
To accommodate 660 coeds by 1959 the University of Pennsylvania will erect one of the two dormitories shown above. (The other will be built later.) The five-story dorm will have a central, covered court and red brick walls broken by a grillelike pattern of windows. Architects for the $4 million project: Eero Saarinen & Associates.

TEXAS-SIZE SHOPPING CENTER

Not surprisingly, Houston, one of the nation's fastest-growing cities, will soon build the nation's largest shopping center. Total area: 110 acres. According to the sponsors of the $100 million project, Oilman R. E. Smith and former Houston Mayor Roy Hofheinz, it will include multistory office buildings, luxury apartments, a 40,000-car parking lot, and a 1,600 foot air-conditioned mall. Architect: John Graham & Co.

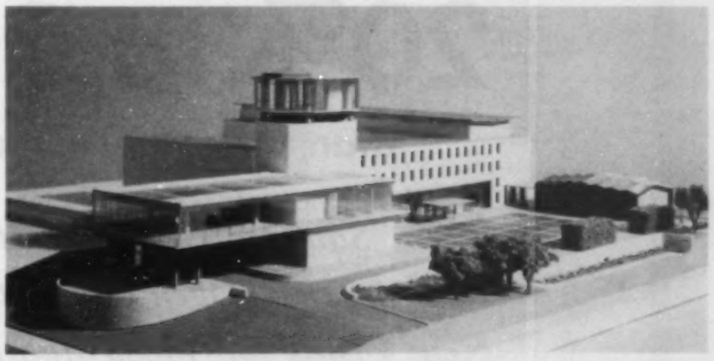
LONG ISLAND CHURCH

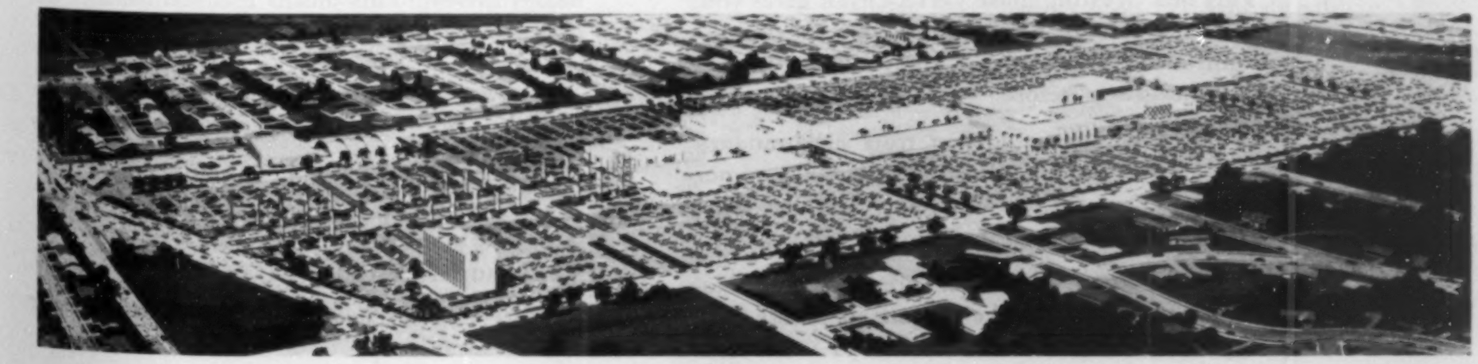
For the Grace Episcopal Church to be built at Massapequa, Long Island, Architects Slater & Chait, have designed a steeply pitched, midnight-blue roof crowned with a multicolored, textured plastic skylight. The roof—which is of sprayed-on, opaque plastic—is supported by laminated trusses. Interestingly, there are no side doors for children; they enter with parents before going downstairs to Sunday School.



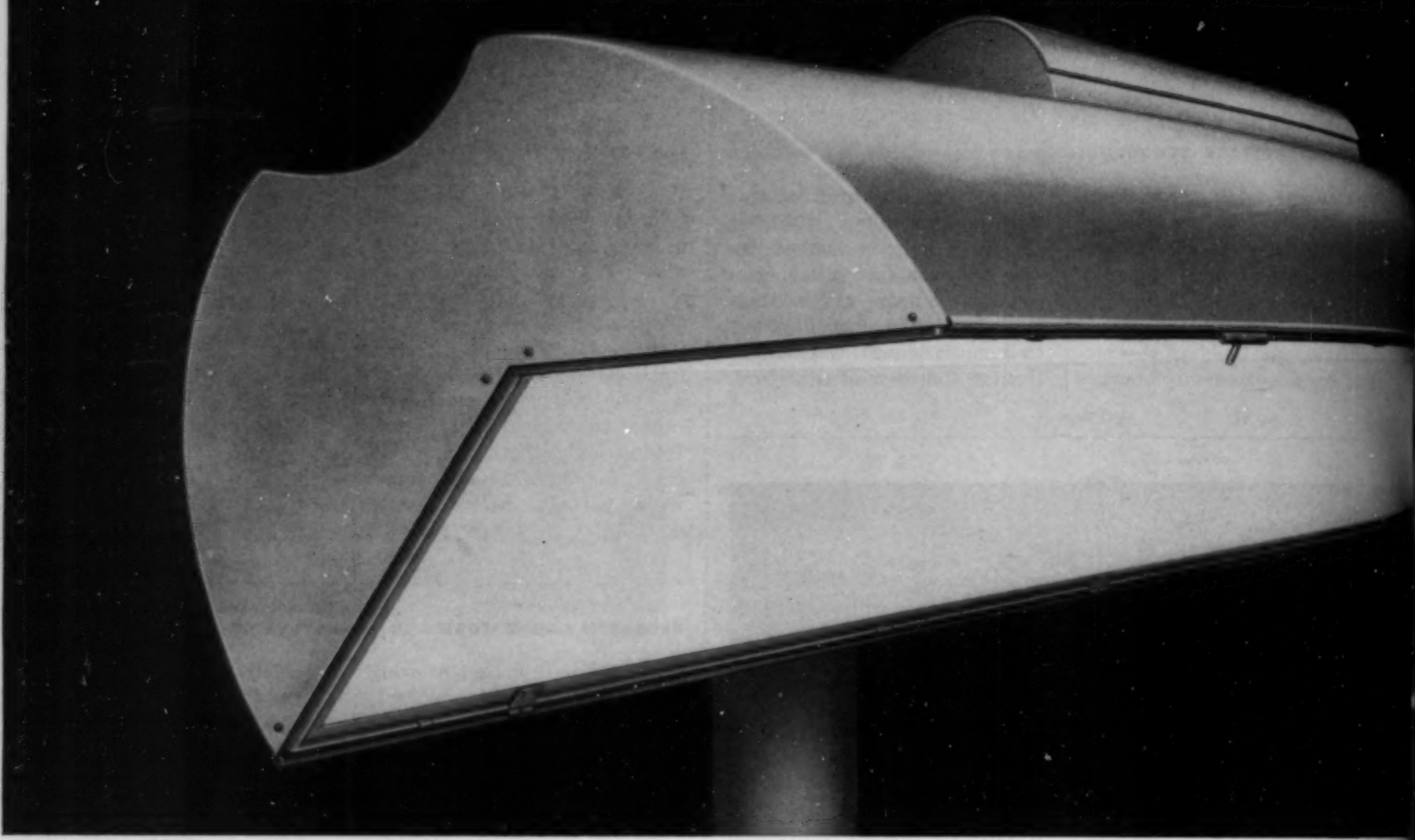
RESEARCH LABORATORIES IN PENNSYLVANIA

On 1,000 hilltop acres overlooking Bethlehem, Pennsylvania (and a stone's throw from the Lehigh University campus), the Bethlehem Steel Co. will complete by 1959 a three-story laboratory and technical information center (below) to coordinate its far-flung research activities. Appropriately, Architects Voorhees, Walker, Smith & Smith have made extensive use of exposed structural steel plates and tubular sections, as well as concrete and limestone.





New VISTA-LINER



20% to 30% more light

than any other fluorescent flood-lighting equipment!

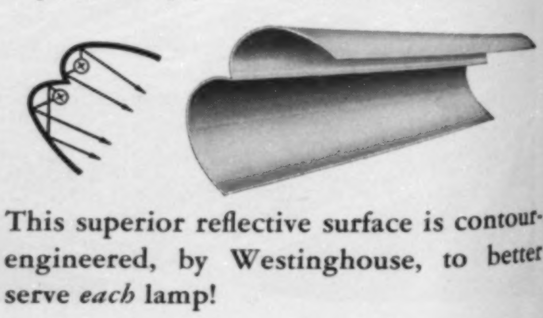
With "Squared Beam" Control! Vista-Liners Open Completely New Vistas for Flood-lighting!

This new Westinghouse VISTA-LINER gives you, as an architect or a consulting engineer, opportunities for flood-lighting applications like you have never had before!

Vista-liners have the first truly ultra-modern appearance—a unique design that your customer can point to with pride, today and for years to come!

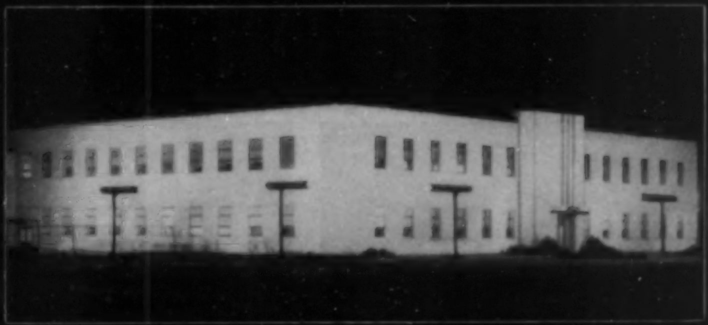
Westinghouse Vista-liners are the first fluorescent floodlights to take advantage of the new super-high-output fluorescent lamps—and do it in a way that appreciably increases luminaire output! Then they provide a sharply defined control of light distribution—that formerly was possible only with incandescent lamps!

They are the first to use the new Bryant snap-in sockets, with stainless steel springs that *do not carry current!* This means less maintenance and improved lamp performance.



This superior reflective surface is contour-engineered, by Westinghouse, to better serve *each* lamp!

by Westinghouse



per watt

This new contour gives Vista-liners a dual optical system with 15% more reflective surface than other designs, to direct the light-source rays. Furthermore, this reflector is shaped so that fewer light-rays are absorbed. Fewer are trapped in opposing lamps. At least 15% more lamp-lumens are released! And Vista-liners produce from 20% to 30% *additional* light from the *same* input!

J-04455

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Westinghouse

"Squared Beam" Control Simplifies Both Functional and Aesthetic Flood-lighting

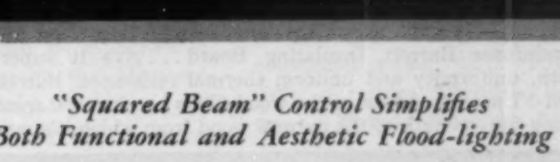
The sleek Vista-liner housing has "square" ends. Its lens is rectangular. Its optical system therefore projects a relatively "squared beam"!

This simplifies the layout of all flood-lighting applications. Squared areas of light are easier to plot and distribute than round areas. Light beams may meet, but need not cause overlapping difficulties. Either uniformity of light or special emphasis is easy to achieve. No light need be wasted beyond the area or the subject to be flood-lighted. Fewer fixtures are needed. And complaints over glare are avoided!

VERSATILE AND RUGGED

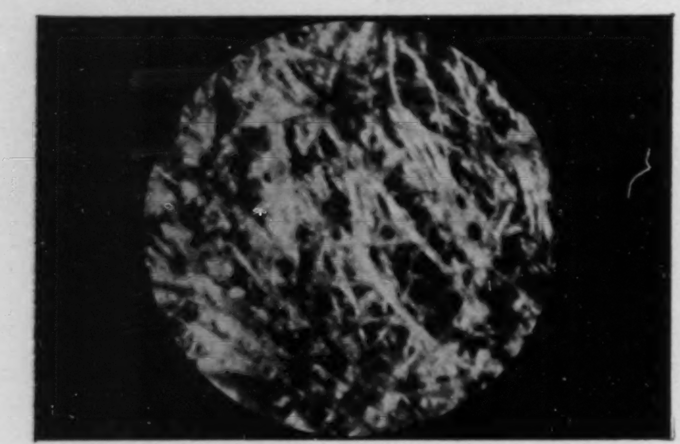
Vista-liner housings are of indestructible fiber-glass. Never need painting. Are light in weight. Mount virtually "anywhere" by a wide variety of cast-aluminum brackets. New design ballast, with separate capacitor—rugged in construction for outdoor service—is mounted in the cast-aluminum bracket. Since ballast heat is removed from the optical system, the lamps operate at a more efficient temperature.

Your nearby Westinghouse Lighting Engineer will gladly help you with technical problems. Call your Westinghouse Representative today. Or write directly to Westinghouse Electric Corporation, Lighting Division, Edgewater Park, Cleveland, Ohio.



THE MICROSCOPE PROVES THE DIFFERENCE

New CHEM-FI manufacturing process preserves the fiber strength of natural wood . . . makes Barrett board stronger, more uniform.

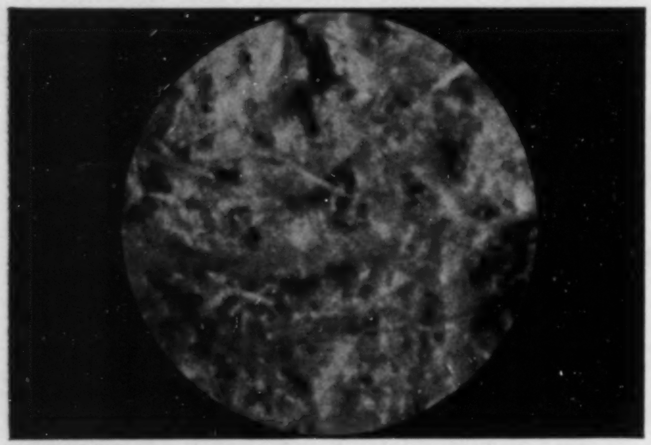


BARRETT INSULATING BOARD (magnified 20 times)

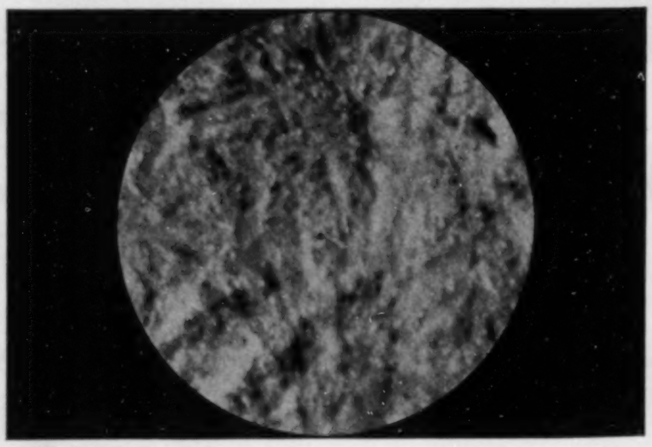
This microphotograph shows the long, interlocking wood fibers that reinforce Barrett Insulating Board . . . give it superior strength, uniformity and uniform thermal resistance. Barrett's CHEM-FI process separates the wood fibers by chemical means, retaining the strength of the natural wood from which it's made.

PROCESS B (magnified 20 times)

Notice that insulating board made by Process "B" has little uniformity in its fiber lengths. Some fibers are long, others are powder-like, providing no reinforcement. For a given board density (and thus a given K factor), Barrett's CHEM-FI manufacturing process produces insulating board of maximum strength.



PROCESS C (magnified 20 times)



PROCESS D (magnified 20 times)

Insulating board made by these processes shows same preponderance of short fibers. Barrett Insulating Board using the CHEM-FI process, is made with longer, more uniform fibers, which have a reinforcing effect and substantially improve strength.

Architects—these microphotographs carry an important message for you!

Compare Barrett Insulating Board with that made by three other processes. There you'll find conclusive proof of the greater strength and more uniform insulating power of Barrett Insulating Sheathing and Barrett Roof Insulation. To insulating sheathing, Barrett's CHEM-FI Process brings superior strength for increased resistance to stress, and greater wall rigidity. To Barrett Roof Insulation, it brings uniformly high insulating value and light weight. Specify Barrett Insulating Sheathing and Roof Insulation made by the CHEM-FI Process—the biggest improvement in insulating board since its introduction. BARRETT DIVISION, Allied Chemical Corporation, 40 Rector Street, New York 6, N. Y.

Design competition for Toronto City Hall narrows to eight finalists; Klutznick leaves Park Forest

STAR NEWSPAPER SERVICE

MAYOR PHILLIPS

Toronto's Mayor **Nathan Phillips** beamed happily last month as he announced that "there is every reason to hope that Toronto is going to have the finest city hall in the world."

Phillips had good reason to be happy. A jury of five experts, including Architect **Eero Saarinen**, had just chosen eight designs from a total of 519 entries in what has probably been the biggest architectural competition ever staged. Each of the eight finalists will receive $7,500 and return to his drawing board to revise and refine his plans until the September 18 deadline when one final design will be chosen for the projected $18 million civic center. The winner will get a 6 per cent fee—or over $1 million.

Perhaps the most striking thing about the eight semifinalists is that two of them are graduate students. **David Ernest Horne**, the only Canadian semifinalist, is a 29-year-old student currently working for his masters degree at Massachusetts Institute of Technology. **John H. Andrews** is an Australian studying at the Harvard Graduate School of Design.

These two have matched the work of six more experienced professionals: **I. M. Pei & Associates** of New York; **Perkins & Will** (design by **Manfred Hufschmid** and **Edwin Paul**) of White Plains, New York; **Frank Mickutowski** of South St. Paul, Minnesota; **William B. Hayward**, of Ann Arbor, Michigan; **Viljo Rewell**, of Helsinki, Finland; and **Halldor Gunnlogsson** and **Jorn Neilsen** of Copenhagen, Denmark.

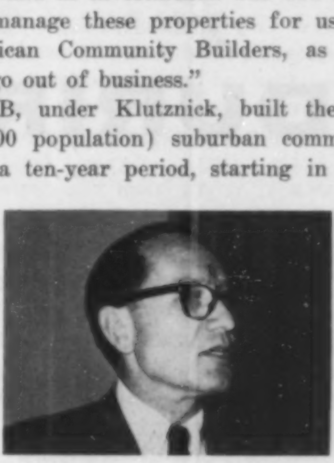
Competition chairman, **Professor Eric Arthur** of Toronto University's School of Architecture, was as delighted as Mayor Phillips over the caliber of the semifinal designs, as well as over the widespread interest in the competition. He says that no international competition has ever aroused such participation. The competition for the League of Nations Palace, for example, brought forth only 400 entries and Berlin's Haupstadt only 393 entries.

Judge Saarinen, too, was impressed by the number of entries, and added: "Architects are a little bit fanatical when they get a competition like this; they forget their wives and families; they just work." Other judges are: **Professor Gordon Stephenson**, former chief planning officer in Great Britain's Ministry of Town and Country Planning, and now head of the division of Town and Regional Planning at Toronto University's School of Architecture; **Sir William Holford**, who prepared plans for the reconstruction of the devastated area around London's St. Paul's Cathedral; **Dr. Ernesto Rogers**, professor of the theory of architecture at the Polytechnic of Milan; and **C. E. Pratt**, architect for the new headquarters building of the British Columbia Electric Co. in Vancouver (FORUM, July 1957).

KLUTZNICK STEPS DOWN

After ten years as chairman of the board of American Community Builders, the chief creator of the huge suburban community of Park Forest, Illinois, **Philip M. Klutznick** is stepping down. Klutznick announced a few weeks ago that the real estate operations, management, planning and development, building and selling of new homes in Park Forest will be turned over to a group headed by **Joseph Goldman**, long a vice president in charge of construction at ACB. Klutznick says: "We ourselves [besides Klutznick, Co-owners **Nathan Manilow**, **Sam Beber**, and **Jerrold Loebl** comprise the group relinquishing control of most of ACB's activities] will continue to own the commercial centers, the rental homes, and the industrial land as investments. The new group will manage these properties for us, and American Community Builders, as such, will go out of business."

ACB, under Klutznick, built the vast (30,000 population) suburban community over a ten-year period, starting in 1948, and has not quit yet. To get the new management group off to a flying start, and incidentally to celebrate the community's tenth anniversary, Klutznick plans a unique gift for the buyers of 1,000 new homes in the new Lincolnwood section of Park Forest: $1,000 in cash to be credited to their accounts upon com-


BUILDER KLUTZNICK

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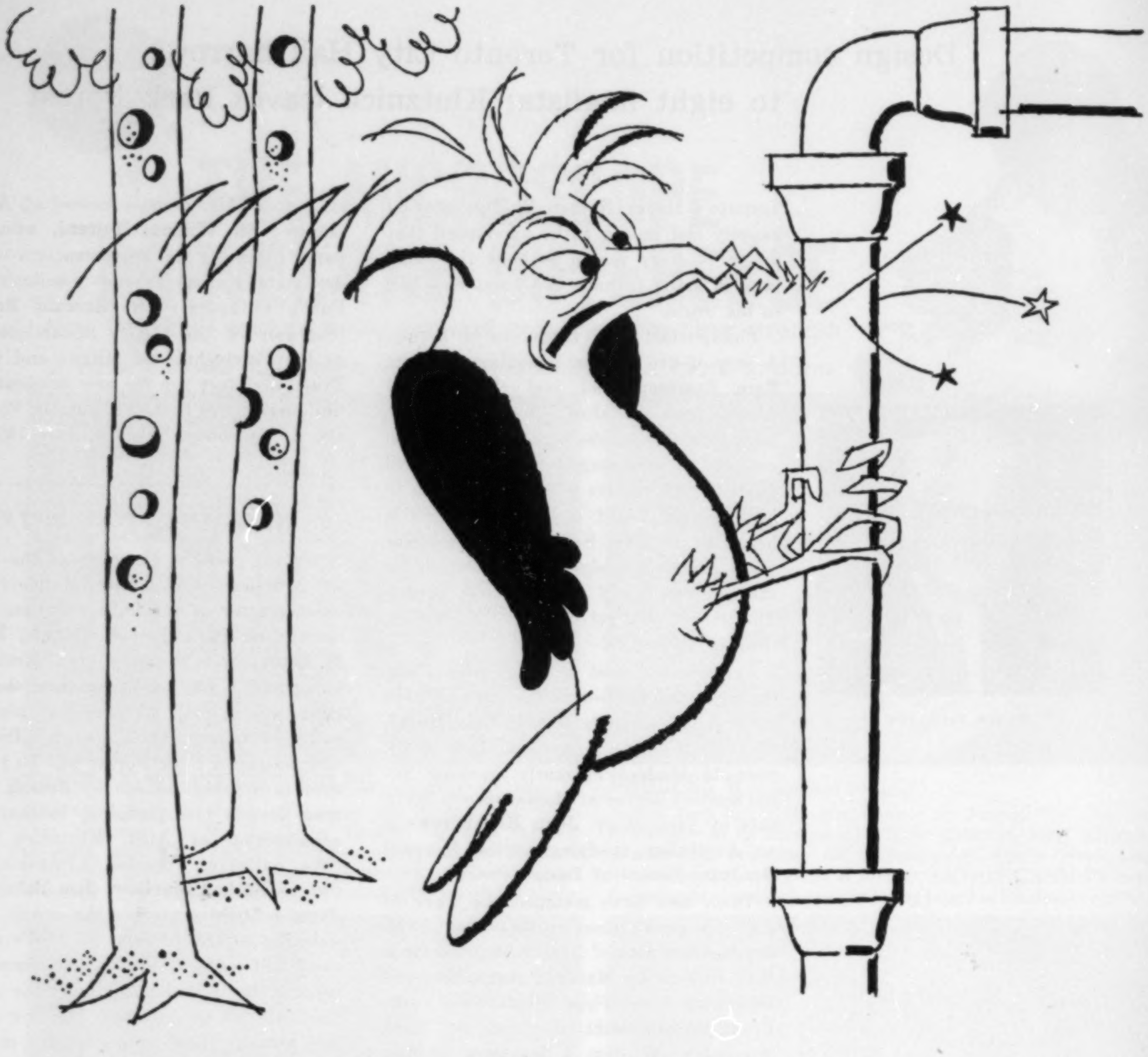

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pletion of the purchase. The only catch is that the money must be spent in Park Forest, and it cannot be applied to the purchase of the home. The offer is good until June 30, 1958. (In the first week since the new section opened, 232 homes, at prices from $21,000 up, were sold.)

Although ACB is undergoing transformation, Klutznick is by no means letting up his own pace. He says: "Personally, I'm trying to unload the day-to-day grind in order to do those things that I feel ought to be done." Among those things is the desire to build a completely planned community in Israel. Klutznick hopes that within 15 years there will be 150,000 people living at the town of Ashdod, near Tel Aviv, where his development will soon start to rise. Klutznick also reportedly plans some new building around Chicago. Another Park Forest? Klutznick does not say, but as one builder who knows him well says: "He has too much energy to stay idle—or to waste his time with small things."

AWARDS

The top architectural award of the American Institute of Architects will go to Chicago Architect **John Wellborn Root**, FAIA, of Holabird, Root & Burgee. The AIA announced last month that Root would be awarded its Gold Medal at AIA's July convention in Cleveland. Root pioneered glass curtain wall design with his A. O. Smith engineering building in Milwaukee 30 years ago, and since has designed a number of Chicago landmarks, including the Conrad Hilton hotel and the Chicago Daily News building.

HEDRICH-BLESSING

ROOT

MIES

Ludwig Mies van der Rohe has been awarded the medal of honor of the New York Chapter of AIA. The award is for his work as a distinguished designer, as well as a teacher—Mies is director of architecture at the Illinois Institute of Technology.

Paul Rudolph, chairman of the Department of Architecture at Yale University, was presented last month with the $1,000 Brunner Memorial Prize in Architecture, awarded each year by the National Institute of Arts and Letters. Rudolph, who at 39 has garnered a fistful of awards already (FORUM, May 1958), was given the prize as "a man who shows promise of widening the horizons or architecture as an art."

Symbolizing the opportunity that every American has to rise from lowly beginnings to prominence in business and industry, Architect **William B. Tabler** was chosen as one of the eight recipients of the 1958 Horatio Alger Awards. Hotel Designer Tabler was honored for toiling in bygone years as a truck driver, a surveyor's chainman, and librarian. His award was bestowed on him by the Association of American Schools and Colleges, based on ballots sent to 3,000 campus leaders in 500 American colleges.

HERBERT MATTER

RUDOLPH

ELI AARON

TABLER

LE TOURNEAU RETURNS

Robert Gilmour Le Tourneau, whose name is practically synonymous with earth-moving equipment, last month ended a five-year exile from the business he pioneered, but faced a fight before he could get back into production. In 1953, Le Tourneau sold the earth-moving equipment manufacturing facilities of R. G. Le Tourneau, Inc. to Westinghouse Air Brake Co. for $31 million. A condition of the sale was that Le Tourneau himself would not make earth movers for five years.

Although the five years are now up, Westinghouse Air Brake is still not ready to face the energetic Le Tourneau, evidently. Last month, the company announced that it had filed suit in federal court in Tyler, Texas to enjoin Le Tourneau from using any earth-moving equipment patents involved in the original sale to Westinghouse or the Le Tourneau trademark. Most important, it seeks to prevent Le Tourneau himself from taking an active part in any resurgence of his own earth-moving equipment business for at least two more years. There will probably be little dispute over the patents, because the terms of the agreement made five years ago provided that Le Tourneau would have to turn over his patents "on demand." Westinghouse never made such

continued on page 34

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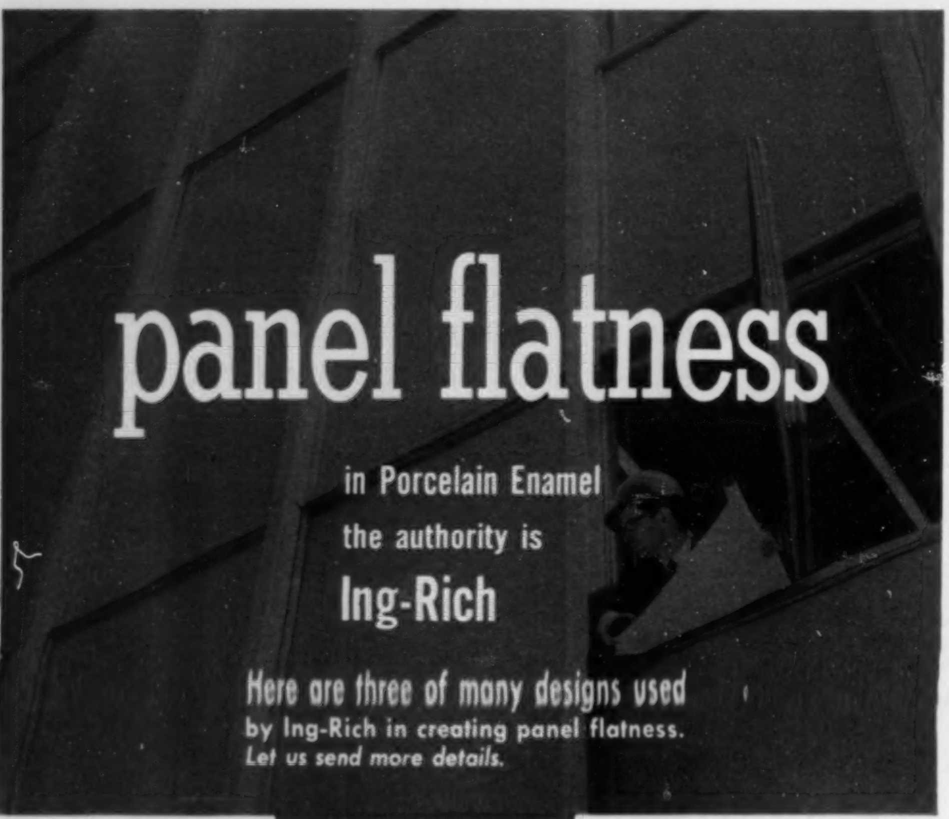

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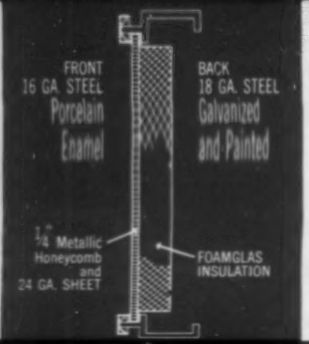
FRONT
16 GA. STEEL
Porcelain
Enamel
BACK
18 GA. STEEL
Galvanized
and Painted
1/4 Metallic
Honeycomb
and
24 GA. SHEET
FOAMGLAS
INSULATION

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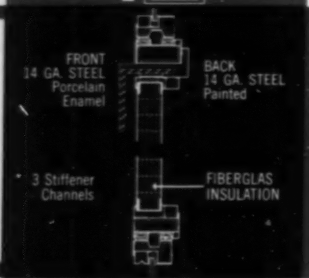
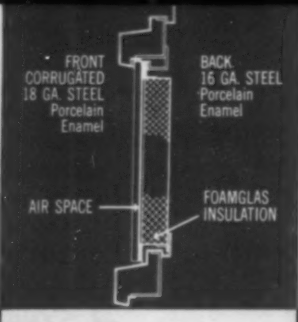

FRONT
14 GA. STEEL
Porcelain
Enamel
BACK
14 GA. STEEL
Painted
3 Stiffener
Channels
FIBERGLAS
INSULATION

U. S. STEEL, Homestead Works Office

4' wide by 12' high, this is the largest insulated panel yet made for architecture. Channelled framework on edges, and three interior stiffeners aid flatness and rigidity.

Corrugated


FRONT
CORRUGATED
18 GA. STEEL
Porcelain
Enamel
BACK
16 GA. STEEL
Porcelain
Enamel
AIR SPACE
FOAMGLAS
INSULATION

RCA Cherry Hill

Corrugated sheets create texture and uniform appearance. From a distance of 200' the effect is of flatness without highlights. Panels are 7'10" wide x 3'3" high.

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Porcelain Enamel Institute

a demand until last month, but rather simply exercised its rights to the patents for equipment.

Le Tourneau had planned to use a new company name, anyway, so he is not disputing the right of Le Tourneau-Westinghouse to his name. What he probably will dispute however, is Westinghouse's efforts to prevent him from being active in his new venture. The Westinghouse action hinges on a little-known agreement, also made five years ago, that Le Tourneau would not act as consultant for any earth-moving company except Le Tourneau-Westinghouse for two years after the five-year agreement was up, or until 1960. But this in effect would prevent Le Tourneau from consulting with himself on earth-moving equipment, and he plans to fight this part of the Westinghouse injunction action.

ED LEACH

LE TOURNEAU

In his five year absence from the earth-moving equipment business, the indefatigable Le Tourneau turned to making mobile logging equipment, offshore oil drilling equipment, and machines that transport earth-moving machines. Meanwhile, he continued to pour 90 per cent of everything that he, personally, earned into the Le Tourneau Foundation (which also holds 90 per cent of his company's stock), a religious fund that Le Tourneau set up 23 years ago as part of his "partnership with God."

Unless Westinghouse succeeds in hamstringing him, Le Tourneau plans to get back into the earth-moving equipment business with even more radical monsters than before, all to be powered by a principle he has been developing for over 15 years—the so-called "electric wheel." Each wheel of a giant mobile machine will be independently driven by an electric motor, in turn powered by a diesel unit. The 69-year-old earth mover says he is not going to rush into production with a whole new line of equipment now, but will carefully assay the market to see what sorts of machines will be needed. Le Tourneau says: "I don't know how fast we'll move into business, or how strong we'll be in it when we get there. But I still have my brains and when it comes to earth-moving equipment, you ain't seen nothing yet."

END

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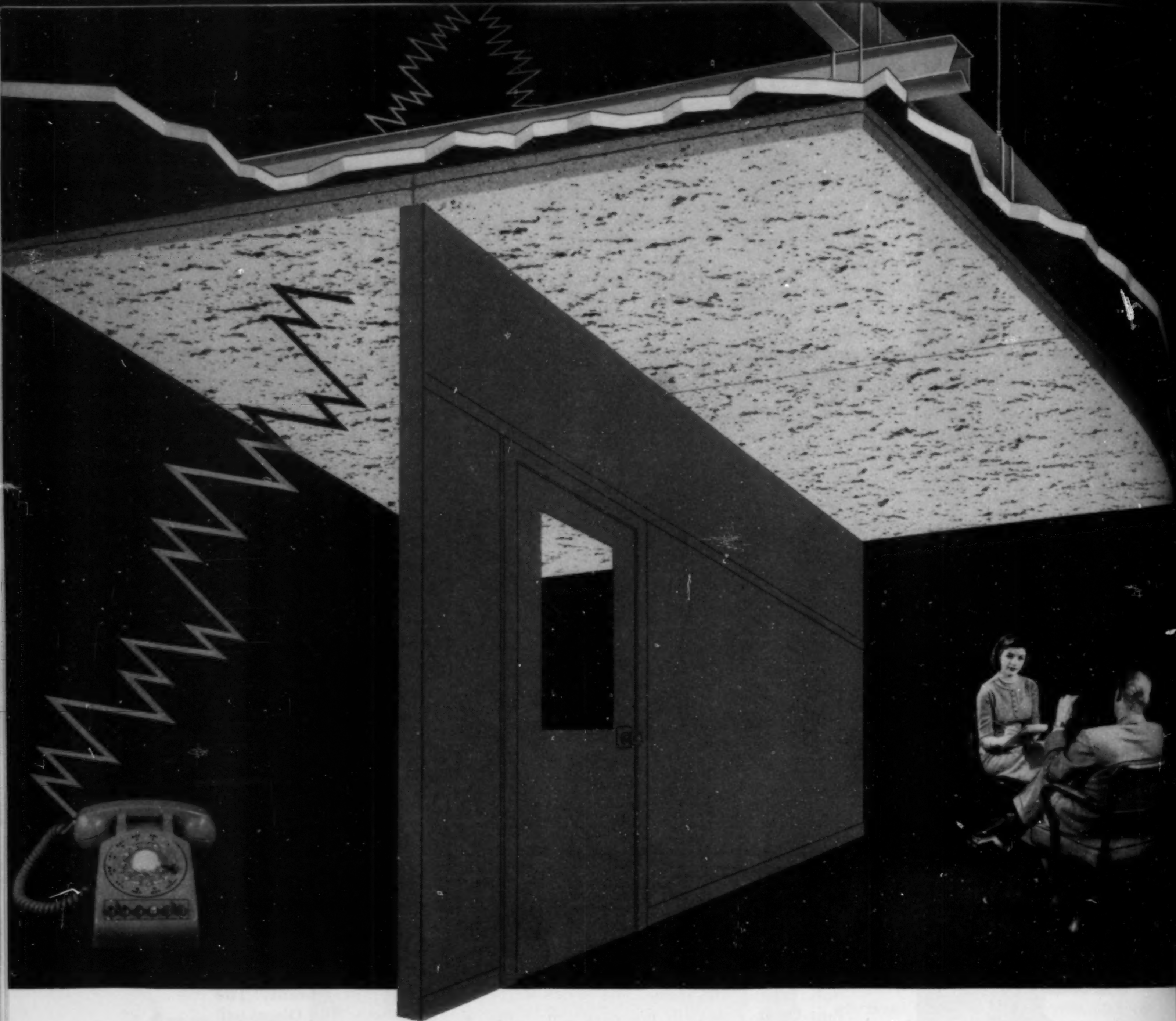


What *should* a ceiling do?

sound isolation *is one of the 7 functions of a modern ceiling*

- structure
- sound absorption
- **sound isolation**
- fire protection
- beauty
- comfort
- economy

SOUND CONTROL IS
A JOB FOR EXPERTS

Good acoustical ceiling construction does not end with the control of sound *within* a room. Unwanted sound from adjacent areas can be reduced effectively and economically by using an ACOUSTONE Mineral Acoustical Tile System.

ACOUSTONE adhered to fireproof U.S.G. Z-BOARD and suspended on U.S.G. Nailing Channels is pictured above. This system is one of several U.S.G. Sound Control Systems specifically designed to provide practical solutions to a wide variety of sound problems.

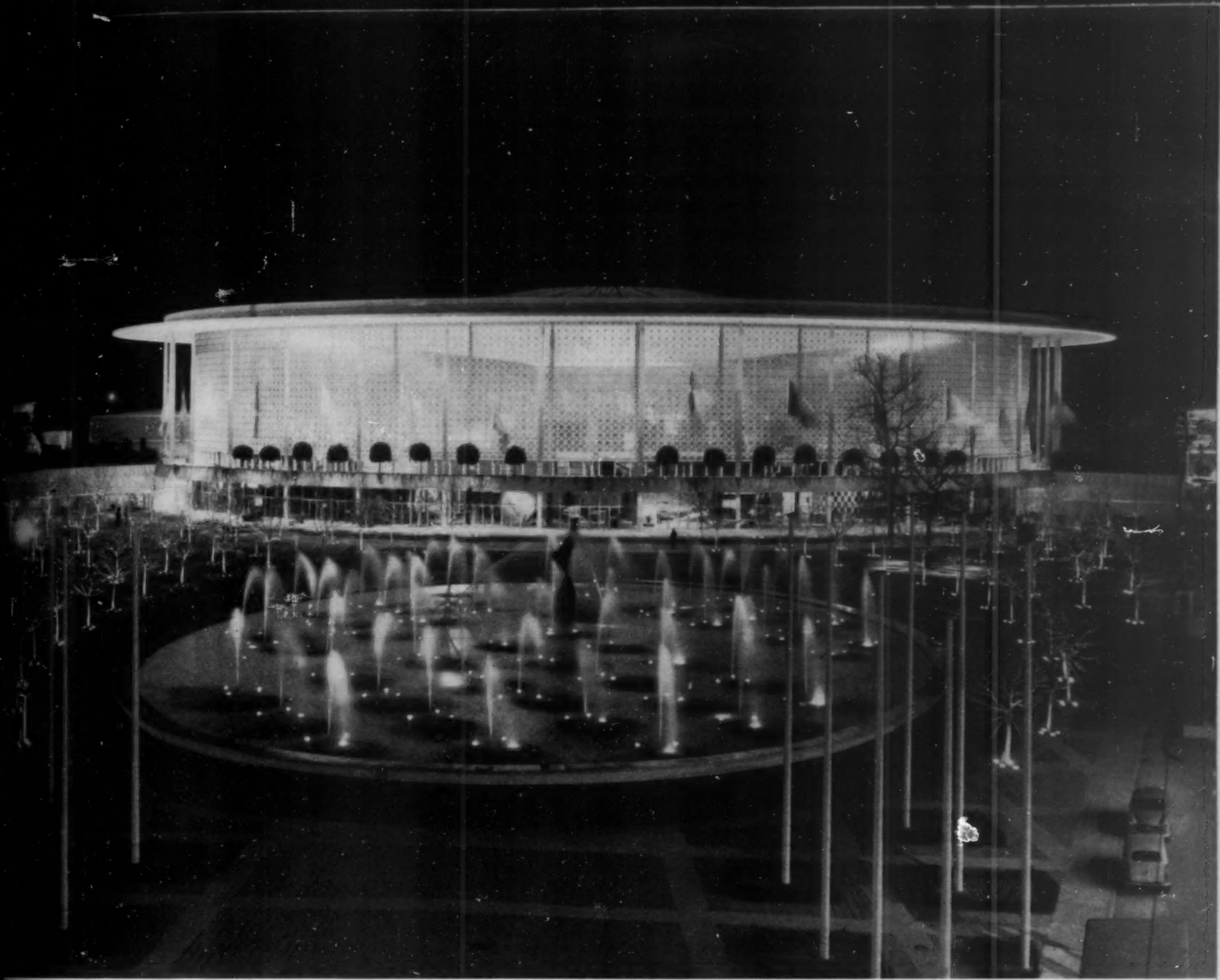
For a free showing of "More than Meets the Eye," U.S.G.'s 16 mm color sound film about good ceiling construction, contact your nearby ACOUSTONE Tile Contractor, or write Dept. AF-83, 300 W. Adams St., Chicago 6, Ill. Additional information in Sweet's Catalog, Section 11a/Uni.

ACOUSTONE*
MINERAL ACOUSTICAL TILE

USG
UNITED
STATES
GYPSUM

*T. M. Reg. U. S. Pat. Off.

UNITED STATES GYPSUM The greatest name in building



U.S. Pavilion Brussels 1958 Universal and International Exhibition Architect: Edward D. Stone

For beauty–of course...but also for greater safety and economy

LINC PLASTIC PANES

Wherever glass is the traditional glazing material, LINC Plastic Panes will serve even more efficiently—as they are serving on the U. S. Pavilion at the Brussels Fair. For they provide the extra advantages of safety and long-term economy.

More and more architects are specifying LINC Panes for windows, partitions and door panels when safety is an important factor. Contractors are installing them more easily, more confidently. And building clients are showing increased savings from reduced breakage—where vibration, concussion or rough contact would break any ordinary glazing material.

LINC PLASTIC SHEETS
LAMINATIONS, INC.
1008 S. Irving Avenue • Scranton, Pa.

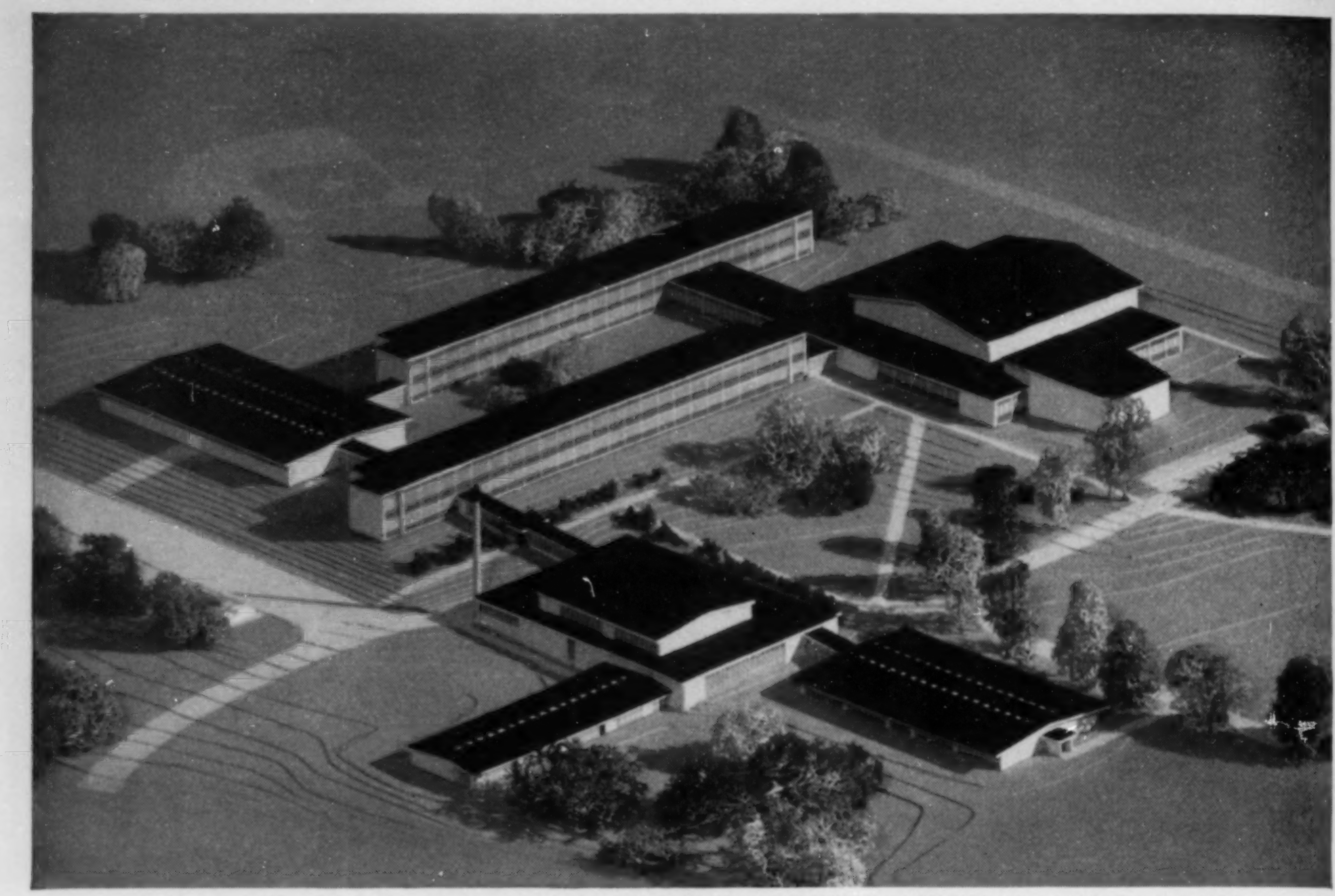
For full information on LINC Plastic Panes, mail this coupon—today.

LAMINATIONS, INC., Dept. AF-6
1008 S. Irving Ave., Scranton, Pa.

Please send full particulars about LINC Plastic Panes

Your Name________________ Title________
Company________________________
Address________________________
City____________ Zone_____ State________

A continuing series of outstanding schools, churches, office buildings, hospitals and industrial structures using NORTON DOOR CLOSERS



HAARSTICK LUNDGREN AND ASSOCIATES INC.—ARCHITECTS, ENGINEERS
HARDWARE DISTRIBUTOR: WHEELER HARDWARE CO., ST. PAUL, MINN.

SCHOOL PLANNING THAT LOOKS AHEAD SPECIFIES NORTON DOOR CLOSERS

Burnsville School—Independent District No. 191—Savage, Minnesota

Here's an outstanding new school building—the result of plans that were made to meet some twenty carefully considered objectives. Among them: (1) The building must be functional; modern beauty without waste. (2) It must be of good materials to stand the test of time. These two factors governed selection of door closers.

Interior doors have NORTON INADOR Closers mortised into the top rail. Their compact, fully concealed mechanism packs all the rugged dependable power of true liquid-type closers plus the reliability, low maintenance and precision workmanship common to all *Norton Door Closers.*

Exterior doors use Norton Surface-Mounted Closers, modern counterparts of Norton Closers still in daily use after serving continuously up to 30 years and longer in some of America's most famous public buildings. For fully illustrated data on these and other models, consult the current Norton Catalog. Write for it today.

Complete Norton Line Meets Every Door Closer Need

NORTON INADOR for Streamlined Modern Design available with (A) regular arm and (B) holder arm...4 sizes to meet all standard requirements.

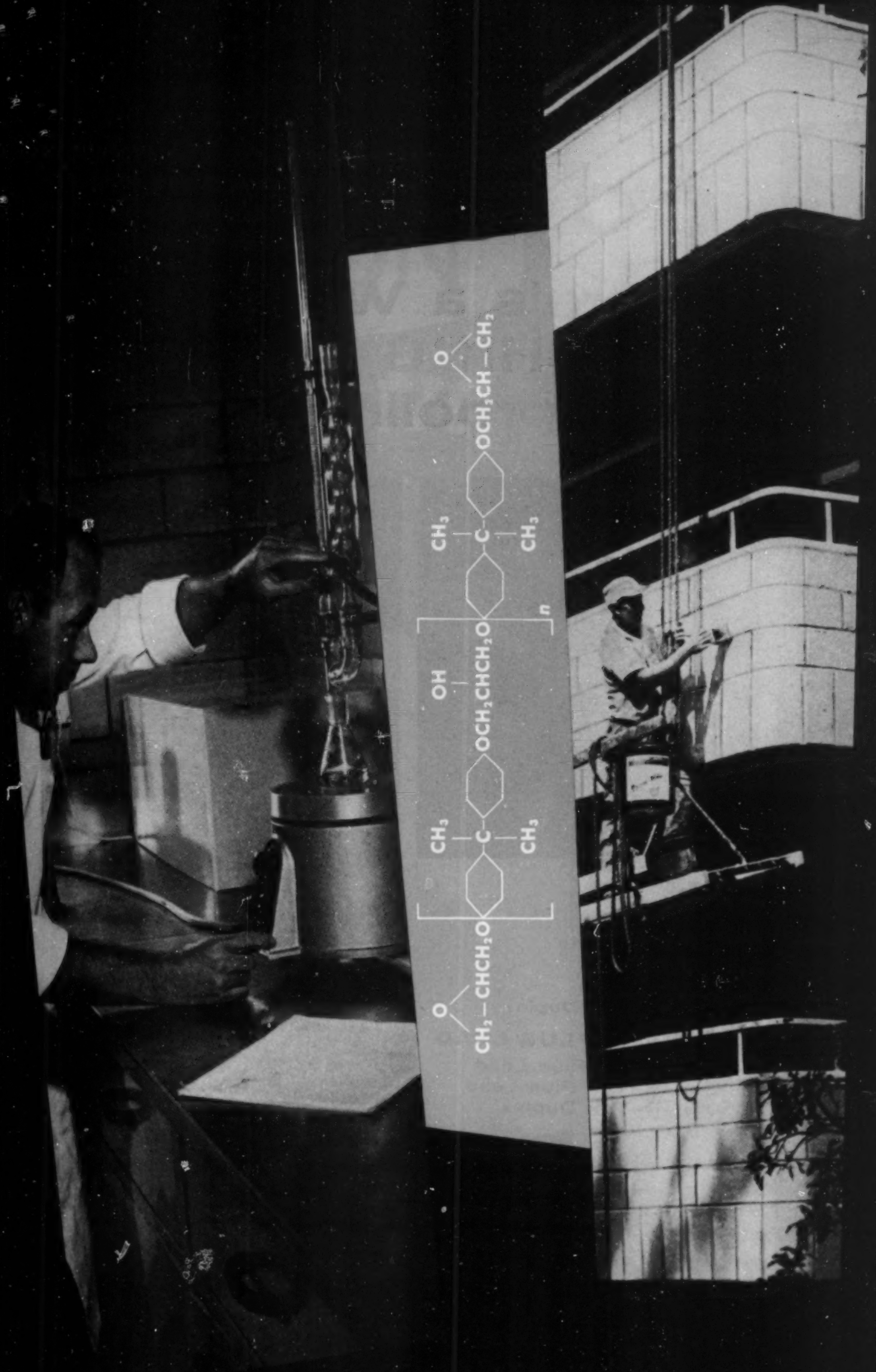
NORTON 750: New corner design with concealed arms for all type doors, particularly narrow rail doors.

Norton Surface-type Closers are available for all installations where concealment is not essential.

NORTON 703E: Compact surface mounted type...first closer with extruded aluminum alloy shell.

NORTON® DOOR CLOSERS

Dept. AF-68 • Berrien Springs, Michigan



CIBA
Araldite®
Epoxies
are
the
something
new
in modern
coatings
chemistry
that
achieves
lasting
watertight
beauty
at low cost
on all
masonry
materials

In the U.S. and Canada,
Ciba produces basic resins only.

CIBA

"FIRST IN EPOXIES"

Simple as A-B-C to apply, here is the handsome answer to close-budget construction of schools, public buildings, factories, commercial structures, and apartment houses, completely flexible to meet all conditions. CIBA Epoxy-based finishes may be site-applied or factory finished.

Send for the Araldite Epoxy Booklet, "Epoxy-Based Masonry Materials for Construction, Rehabilitation and Maintenance."

CIBA COMPANY INC., Plastics Division, Kimberton, Pa. AF 8-6

Please send me the new CIBA illustrated booklet "Epoxy-Based Masonry Materials for Construction, Rehabilitation and Maintenance."

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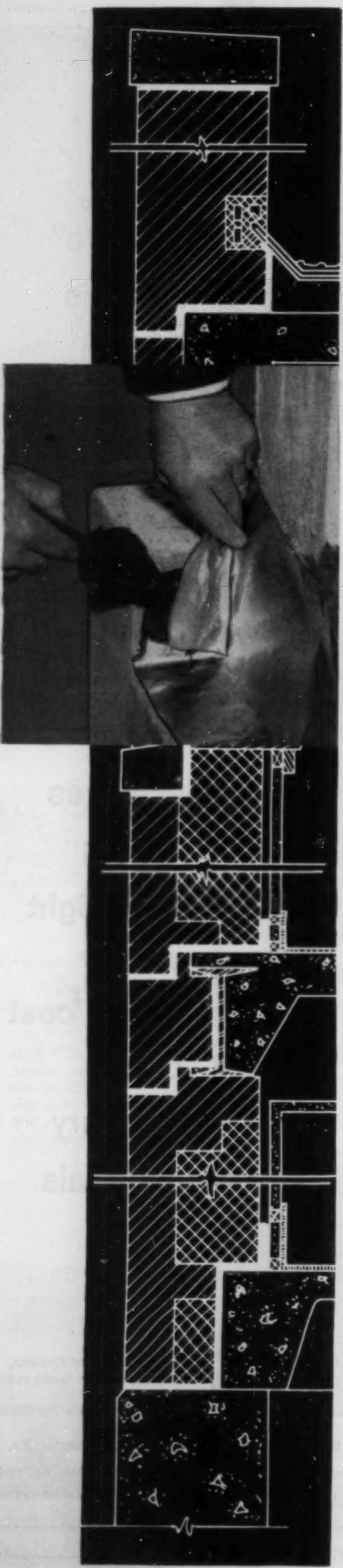
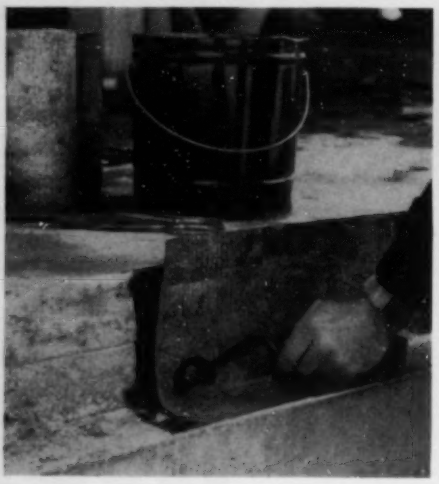
COMPANY TITLE
ADDRESS
CITY STATE



COMPLETE!

There's a WASCO FLASHING for every waterproofing need



COPPER
Copper-Fabric
Copperseal
Cop-R-Tex
Cop-R-Tex Duplex

COPPER PLUS LEAD
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Cop-R-Tex Duplex
  Plus Lead

ALUMINUM
Aluminum Fabric Flashing
Coated Aluminum Flashing

FABRIC
Fabricote
Fabric Flashing
Membrane Waterproofing
  Fabric
Full Seal Fabric

PLASTIC
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Wascoseal

ALSO
Reglet
Shower Pans

Each of these flexible, prefabricated flashings is made and distributed by a single specialized organization which has been a leader in thru-wall flashing since 1935. Because Wasco manufactures a complete line, your Wasco Man can help you find the right flashing for each waterproofing problem.

Write today for illustrated catalogue of Wasco Flashings and application drawings or see Sweets 8g/Wa.

WASCO PRODUCTS, INC.
Bay State Road, Cambridge 38, Mass.

SKYDOMES® FLASHING ACRYLITE® TUB and SHOWER ENCLOSURES

RIXSON

automatic DOOR OPERATOR

installed in the rigid floor

completely concealed

electrically actuated

OPENS THE DOOR hydraulically

CLOSES THE DOOR hydraulically

NO SPRINGS to break

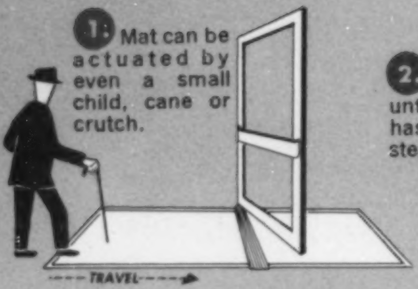
a product of

THE OSCAR C. RIXSON COMPANY

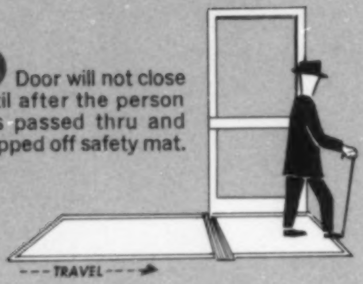
for over 55 years leading manufacturers of mechanized hardware . . .

even the safety is *automatic*

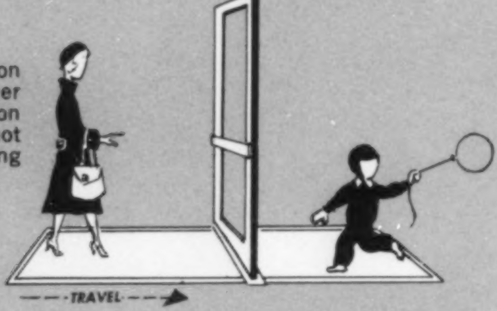
1. Mat can be actuated by even a small child, cane or crutch.



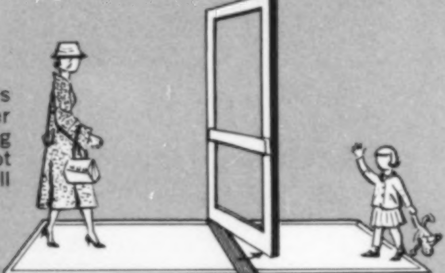
2. Door will not close until after the person has passed thru and stepped off safety mat.



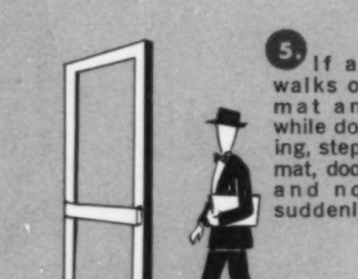
3. If person is on safety mat, another person stepping on actuating mat will not cause door to swing open.



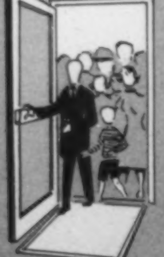
4. If a person steps on safety mat after door is in opening swing, door will not strike him, but will STOP.



5. If a person walks off safety mat and then, while door is closing, steps back on mat, door will stop and not swing suddenly open.

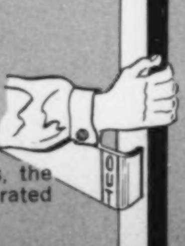


6. A safety trip prevents motor from running continuously and avoids danger of overheating.



7. A break-a-way that allows doors operating IN to be forced OUT in emergency (if there are no door stops) is standard equipment.

8. If power fails, the door may be operated manually.



no pushing — no pulling

JUST WALK THROUGH

the RIXSON *automati*

safely and silently

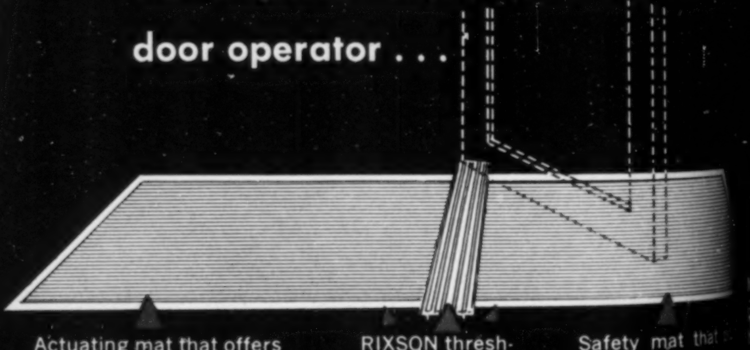
opens and closes the door

The **RIXSON *automatic*** has been caref engineered to offer many new advantages safety and function. In addition to the safety tures, there are many functional advantages which the following are the most outstanding

1. The RIXSON automatic opens the door by hydraulic and closes the door by hydraulic power—no springs requ
2. The door is under complete hydraulic control at ALL
3. The opening and closing speeds are independently able.
4. A dry-sump system confines the fluid to the cylinder of unit, avoiding damage from fluid leakage on floor.

The floor unit is center hung and concealed in floor. The door can be actuated by a switch on floor, desk or wall, or by a hanging pull-ch switch, as well as by electric mats.

Here are the components that make RIXSON *automat* the simplest, safest, most trouble- door operator . . .



Actuating mat that offers an invitation to "Walk through, sir!"

RIXSON threshold and matching mat trim.

Safety mat that waits with an sir!"

NOTE: Door can be actuated by many other switching means or devices. Door be held in open position as long as desired without aid of door stops.

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door

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RIXSON / *automatic*

a thoughtful SERVICE your patrons, guests and staff will appreciate

IN STORES . . . The housewife, loaded with bundles and with small children in tow, appreciates the thoughtful SERVICE of the RIXSON automatic. She just WALKS THRU . . . the **RIXSON *automatic*** does the rest.

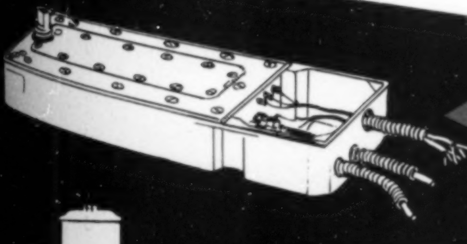
IN RESTAURANTS . . . Efficiency is improved greatly, especially during rush hours when employees carrying trays can just WALK THRU without bothering to push open the door. The savings in reduced accidents and breakage is also noticeable.

IN HOSPITALS . . . The hospital staff, with occupied or sterilized hands, need not touch the door. They just step on mat or press floor or wall button by foot or elbow and WALK THRU. The **RIXSON *automatic*** safely takes care of the opening and closing.

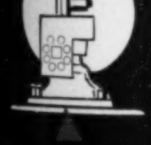
IN OFFICES and FACTORIES . . . Doors to office suites and between departments need a **RIXSON *automatic***. Doors to private offices (and to some departments for security reasons) can be actuated by a switch on executive's desk. Factory doors can be actuated by overhead chain switch or special mats for passage of lift trucks.

IN HOTELS and TERMINALS . . . The "Welcome" mat of gracious service is always out to greet guests at hotel entrances when a **RIXSON *automatic*** tends the door. Bus and railway terminal traffic is always smoother and more rapid with the **RIXSON *automatic.***

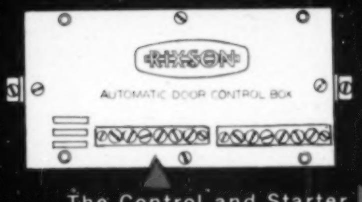
AT BUILDING ENTRANCES . . . Offices, factories, institutions, banks, etc., have greater prestige and efficiency with the "thoughtful service" of a **RIXSON *automatic*** at the entrance.



Concealed floor unit hydraulically powered in both opening and closing cycle.



Motor-pump unit that supplies hydraulic power. Can be placed above, level with or below floor as in basement, within 50 feet of floor unit.



The Control and Starter boxes which are the "electronic brains" that tell the operator when to open, when to close, how long to stay and do all the "safety" thinking.

RIXSON *automatic*

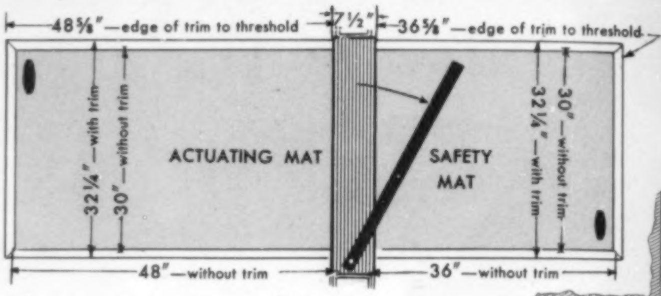
planned installation units to meet all requirements . . .

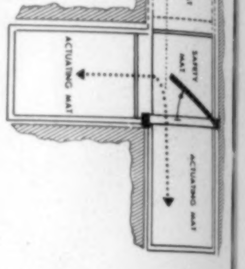
model no. 2600

for operating single doors . . .

Each model is a complete unit for operating a single door. Especially suitable for OUT doors on installations where the IN door is manually operated.

NOTE: It is recommended in many cases that two No. 2600 units be used instead of one No. 2601 described below.


48⅝"—edge of trim to threshold
7½"
36⅝"—edge of trim to threshold
32¼"—with trim
30"—without trim
ACTUATING MAT
SAFETY MAT
32¼"—with trim
30"—without trim
48"—without trim
36"—without trim


ACTUATING MAT
ACTUATING MAT
SAFETY MAT
ACTUATING MAT

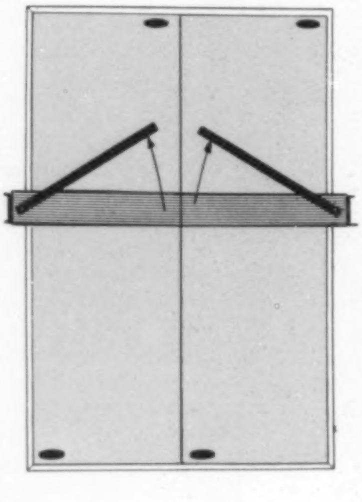
multiple mat – model no. 2600-S

By special arrangement of mats (see illustration), it is possible for a single door to function as both an "in" and an "out" door with complete safety. Your inquiry is invited.

model no. 2601

for pairs of doors that operate simultaneously . . .

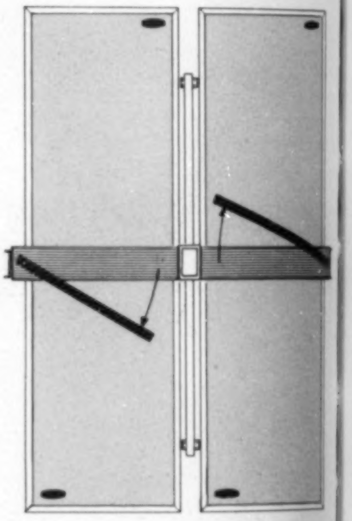
This installation is often specified for handling heavy one-way traffic. A slight savings is effected over use of two No. 2600 units because the No. 2601 has only one motor with double pump and one control box for the operation of two doors.



model no. 2602

for pairs of doors where each operates independently . . .

This model is used to operate two doors where there is one "in" and one "out" door. The No. 2602 consists of a combination of two No. 2600 units. The actuating and safety mats are each 48" long.



BASIC INSTALLATION INFORMATION

FLOOR UNIT—overall dimensions with cement case 21¾" long x 6-1/16" wide x 3-15/16" deep.

MOTOR PUMP—115 volt, 60 cycle, single phase (unless otherwise specified).

MATS—standard color brown—see dimensions above.

THRESHOLD and TRIMS—cut to fit jamb to jamb dimensions and mat dimensions.

FLEXIBLE CONDUIT—furnished for protection of hoses and low voltage cable through concrete.

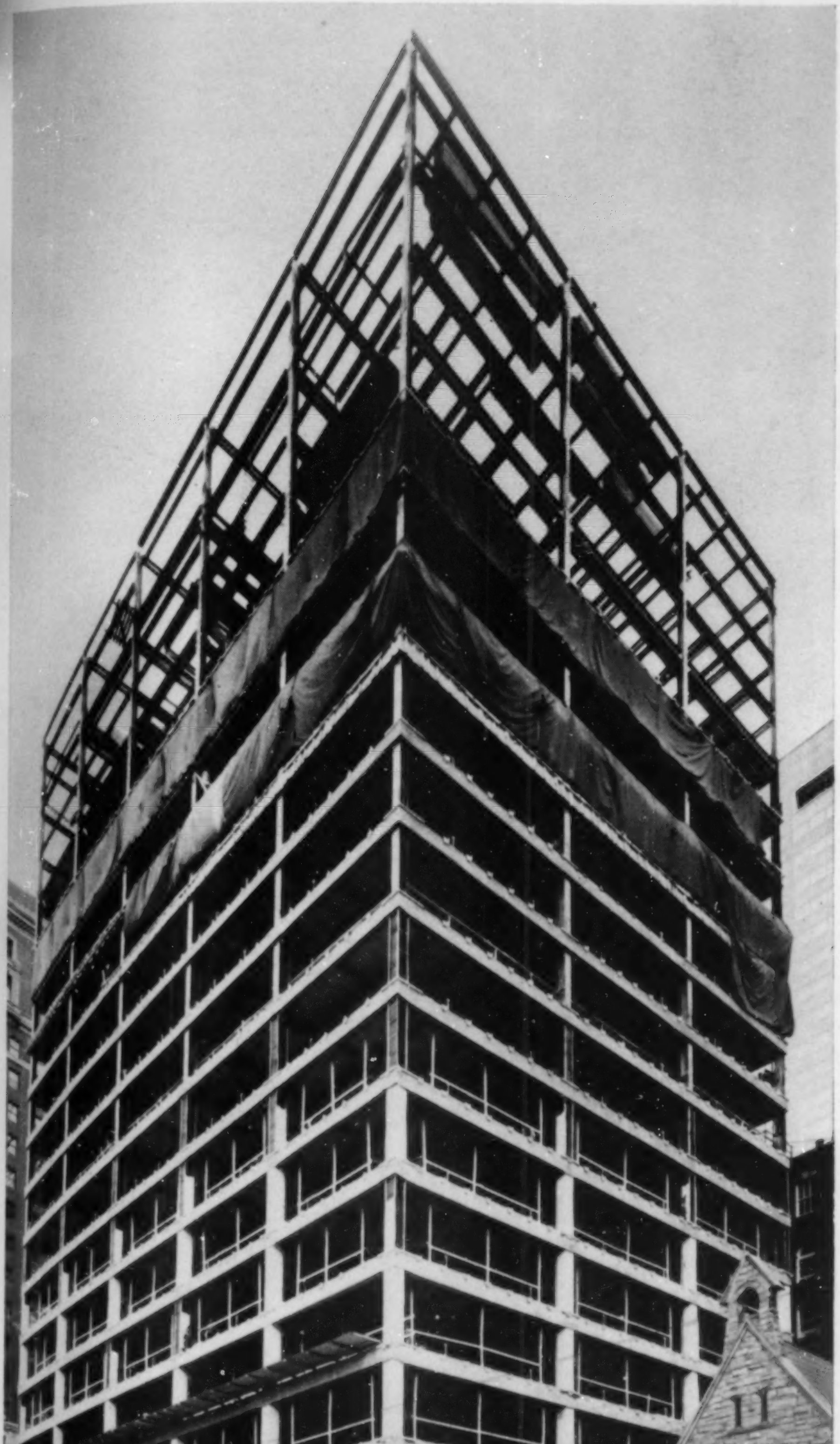
ACCESSORIES—guard rails and finger guards furnished when specified.

Write for complete detailed suggested specifications

Complete template and installation instructions are furnished. Rixson engineers will gladly consult with you in working out any actuating or traffic control problems.

© 1958

THE OSCAR C. RIXSON COMPANY
9100 west belmont avenue • franklin park, illinois
CANADIAN PLANT: 43 racine road • rexdale, ontario
printed in U.S.A.



Another Pittsburgh steel-framed skyscraper by American Bridge

American Bridge continues to play a major role in the rebuilding of Pittsburgh's Golden Triangle. Here's the latest addition . . . and another example of American Bridge handiwork with steel.

It is the new home of the H. K. Porter Company. Two-hundred and twenty feet high, it measures 92′ 8″ by 117′ 6″ long. American Bridge handled both fabrication and erection of the 2,330 tons of structural steel in this important new office building . . . completed framework erection in December, 1957. All field connections were made with high strength bolts.

American Bridge is equipped — with men, equipment, and more than 50 years of experience—to erect any type of steel structure. If you are designing a building, a bridge, a tower, use steel to gain strength and ease of construction. And call on the trained experts at American Bridge for help on structural design problems. Get in touch with our nearest office.

Architect: Harrison & Abramovitz, New York City
Structural Engineer: Edwards & Hjorth, New York City
Contractor: George A. Fuller Company, Pittsburgh, Pa.

American Bridge
Division of USS **United States Steel**
TRADEMARK

Contracting Offices in: Ambridge · Atlanta · Baltimore · Birmingham · Boston · Chicago · Cincinnati · Cleveland · Dallas · Denver · Detroit · Elmira
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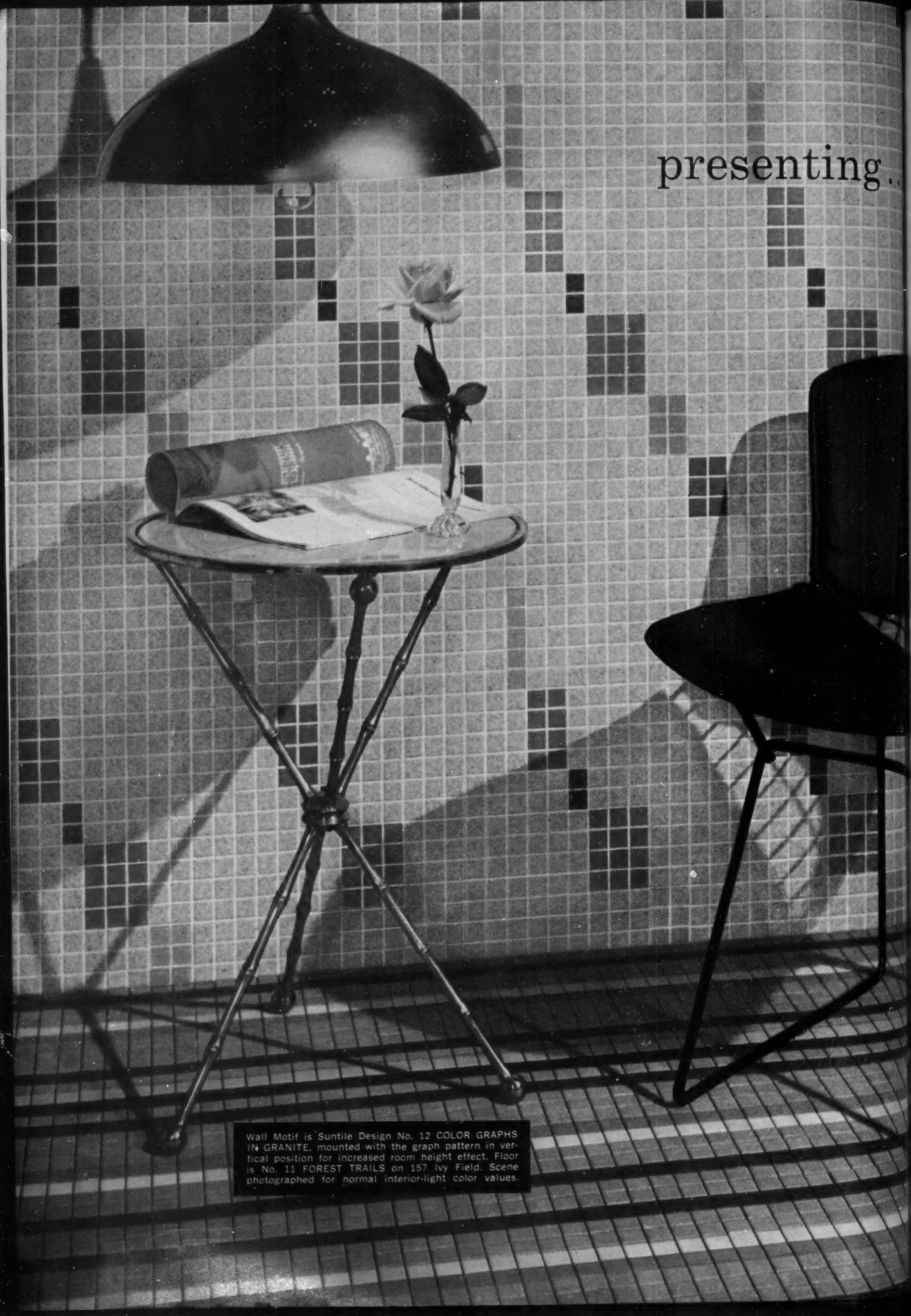
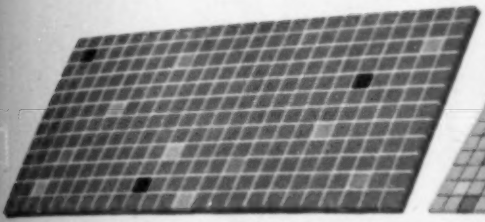


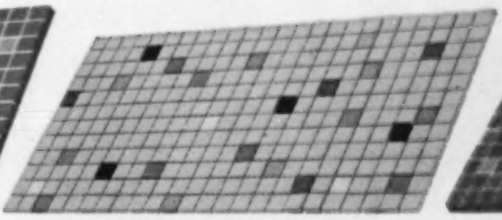
Wall Motif is Suntile Design No. 12 COLOR GRAPHS IN GRANITE, mounted with the graph pattern in vertical position for increased room height effect. Floor is No. 11 FOREST TRAILS on 157 Ivy Field. Scene photographed for normal interior-light color values.

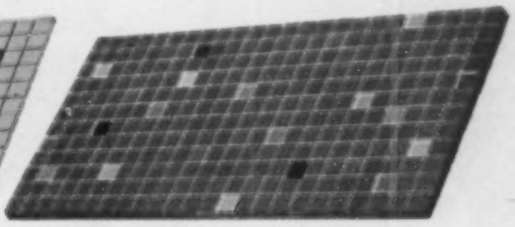
new designs in *Suntile* ceramics

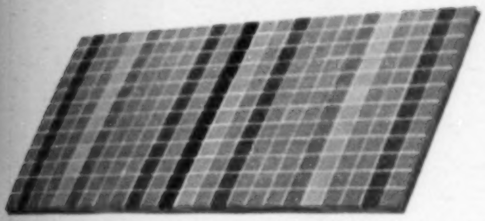
by noted modern artist Max Spivak

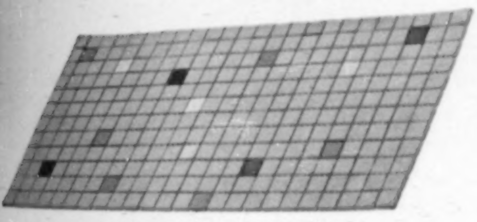
Here are new patterns to give your creative talents wider scope in ceramics. You can originate fresh wall and floor treatments, form subtle decorative harmonies, and use the motifs as insets, stripes, murals, borders, and geometric or random designs.

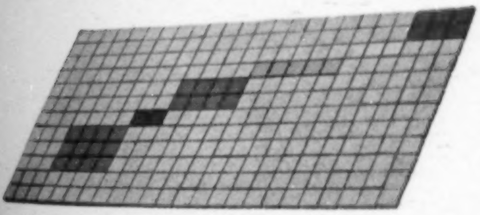

No. 15 DRESDEN BLUE BUCKSHOT

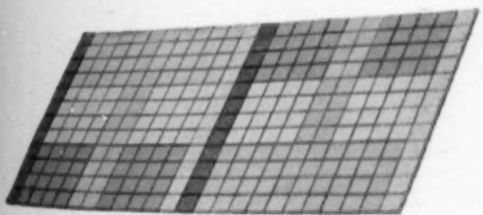

No. 19 CITRUS YELLOW BUCKSHOT


No. 17 TURQUOISE BUCKSHOT


No. 11 FOREST TRAILS on 157 Ivy Field


No. 18 CAMEO PINK BUCKSHOT


No. 12 COLOR GRAPHS IN GRANITE


No. 5 PINK DAWN

Suntile designs are economical, because the 1″ x 1″ tiles are pre-mounted on 1 x 2 foot SETFAST* sheets for fast installation with strongest bond.

Your Suntile Dealer's telephone number may be found in your classified telephone directory. For special assistance with design write Harry J. Macke, Director of Design, at the Cambridge Tile Manufacturing Company.

How SETFAST insures strongest, fastest, most economical installations

*SETFAST is an exclusive development of the Cambridge Tile Manufacturing Company, and, together with the popular Spivak designs, has helped make possible the current renaissance of ceramic tile. SETFAST allows labor-saving application of tile in 1 x 2 foot sheets, and puts a durable, flexible unit between tile-and-tile and tile-and-wall! . . . like the ribs in reinforced concrete!

Both Suntile Wall Tile and Spivak ceramic patterns are manufactured in SETFAST.

*Pats. Pending

Send for color folder of Suntile designs

Suntile
A Ceramic tile
Bright with color
Right for life

Cambridge Tile Mfg. Co.
P. O. Box 71, Cincinnati 15, Ohio

Gentlemen:
Please send me color brochure of Suntile designs.

Name____________________

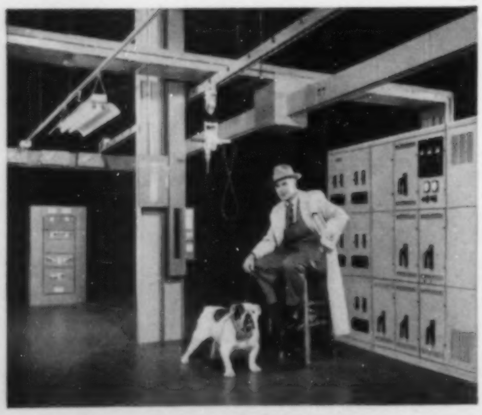
Company____________________

Address____________________

City____________________

THE CAMBRIDGE TILE MFG. CO.
P.O. Box 71, Cincinnati 15, Ohio

New circuits in seconds at half the cost!



COORDINATED COMPONENTS. BullDog equipment works together to feed specific industrial, commercial or institutional power needs. Whether it be LO-X®, Plug-In Duct, a substation or a complete distribution system, BullDog can help you put a business in top electrical shape and keep it there! © BEPCO

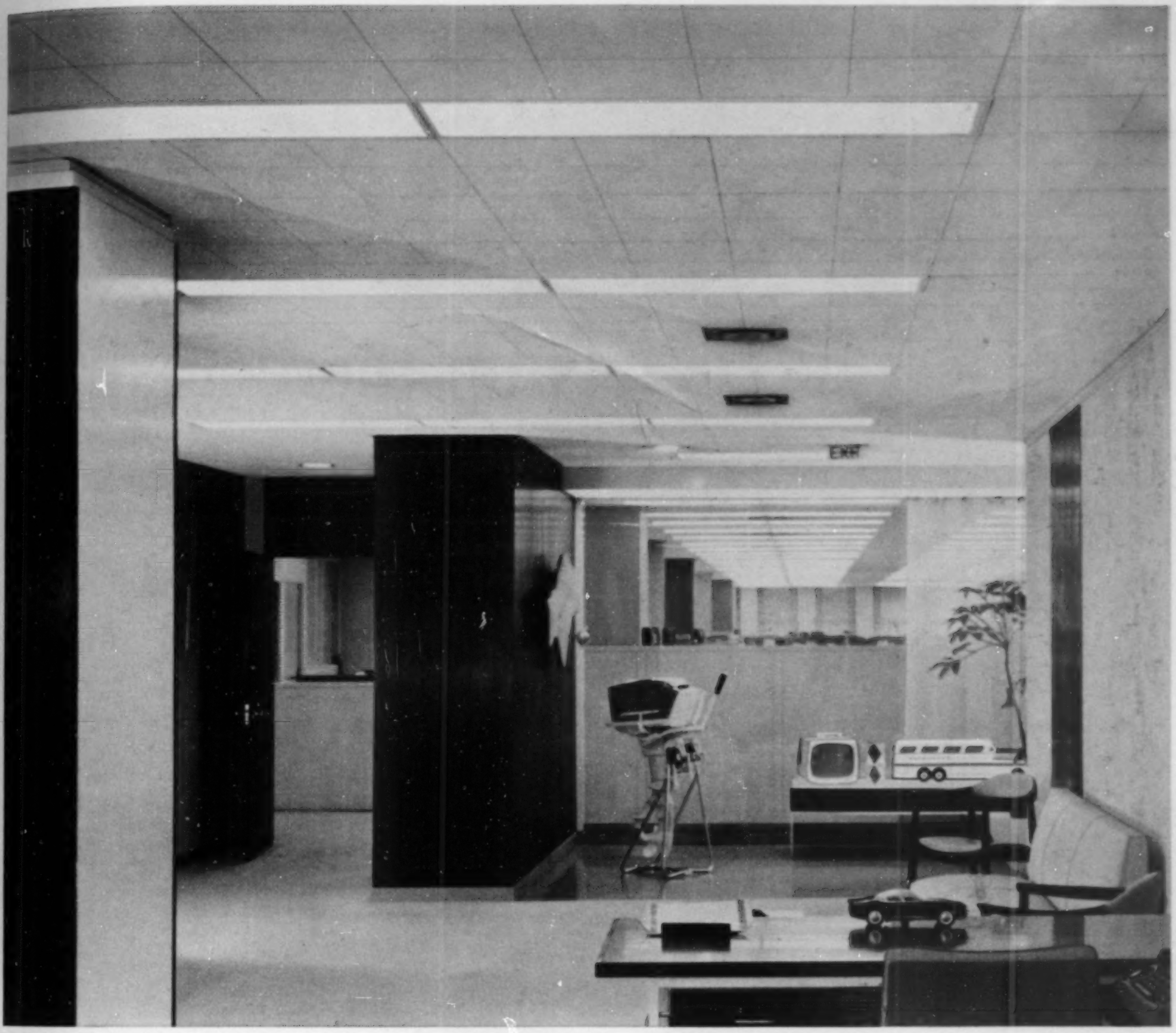
As power goes, so goes production. Recently, an automotive parts plant smoothed major kinks in *both* with an installation of BullDog Plug-In BUStribution® Duct. Where powering new machines and constant shifting of existing equipment once meant electrical downtime and delay, machines now plug into power in seconds. No rewiring, downtime or costly production halts. And the electrical cost of moving and adding machinery has been slimmed by 47%.

Plug-In Duct is part of a complete *electrical* distribution system engineered by BullDog for capacity, reliability, *flexibility*. Consider BullDog products for all your jobs. They are easy to install, assure customer satisfaction. Consult your BullDog field engineer or distributor. Or write BullDog Electric Products Company, Detroit 32, Michigan.

BULLDOG

BullDog Electric Products Company, Division of I-T-E Circuit Breaker Company,
Detroit 32, Mich. *BullDog Export Division:* 13 East 40th St., New York 16, N.Y.
In Canada: BullDog Electric Products Co. (Canada) Ltd., 80 Clayson Rd., Toronto 15, Ont.

HEAT BETTER ELECTRICALLY



Why only glass would do

This is the Raymond Loewy Associates' office in New York City.

You're looking into a reception area; to the rear you can see part of the design department.

Throughout the office you'll note how *colors* have been skillfully put to work creating the right kind of atmosphere.

And to match this feeling, to bring out the richness and warmth of the colors, the lighting fixtures are ceiling-mounted panels of Corning Alba-lite.

Alba-lite is an *opal* glass, one that provides pleasant *diffusion* without any color distortion of the light it transmits. With Alba-lite you get illumination that shows colors at their best—important *both* to the decor and to the men who constantly use color in their work.

Glass itself becomes a design element. Whatever Corning glass you use for lighting, you get *texture* that blends well with any kind of interior.

More: Glass won't warp, fade, or discolor. It is the *one* lighting material that provides function *and* form. Why settle for less?

For the facts, write for "Commercial Lighting Application Guide."

Corning means research in Glass **CORNING GLASS WORKS,** 99-6 Crystal Street, Corning, N.Y.

Those jets up there love me, sa

says Theodora

The seats and carpets are made of tycora

Leave it to a lady. She may not be able to tell a Turbo from a turban, but she does know when an interior is superior. When the new jets fly she'll sit on seats upholstered with fabrics made of Tycora, and walk on carpets made of it too.

Many were studied, Tycora was taken. It passed every test and the requirements were mighty stiff. To please the eye it had to be cool and lovely, practically tranquilizing—give people a pleasurable sense of resting cozy on a cloud. To fill the bill it had to have ferocious stamina and resilience.

Tycora came through like a breeze. For it does have all this sky-high splendor, with granite-like strength and an angelic disposition towards maintenance.

Up there in the air Tycora's doing fine—sound-absorbent, lush and light. Wherever it goes it can be any weight or any way it needs to be. That's the versatility of Tycora. It's the costliest yarn man can make and it makes the miracles happen.

Credit goes to **COLLINS & AIKMAN** who took Tycora yarn and made this aeronautic-approved fabric and carpeting. American, Delta, Pan-American and Trans-Canada specified it for the new jets—the Boeing 707, the Douglas DC-8 and the Lockheed Electra.

This is another example of Tycora yarn engineered for a specific end use. There's a Tycora yarn for every commercial and consumer need.

Consult Tycora engineers: Textured Yarn Co., 40 East 34th Street, New York 16.

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ON IMAGINATION

. . . because Romany·Spartan continually brings architects new colors and finishes that stimulate creativity. This bath is a typical example of the design possibilities of Romany·Spartan's new Decorator Tile. If you'd like more information or design assistance, contact your nearby Romany·Spartan representative . . . or write United States Ceramic Tile Company, Dept. A-20, Canton 2, Ohio.

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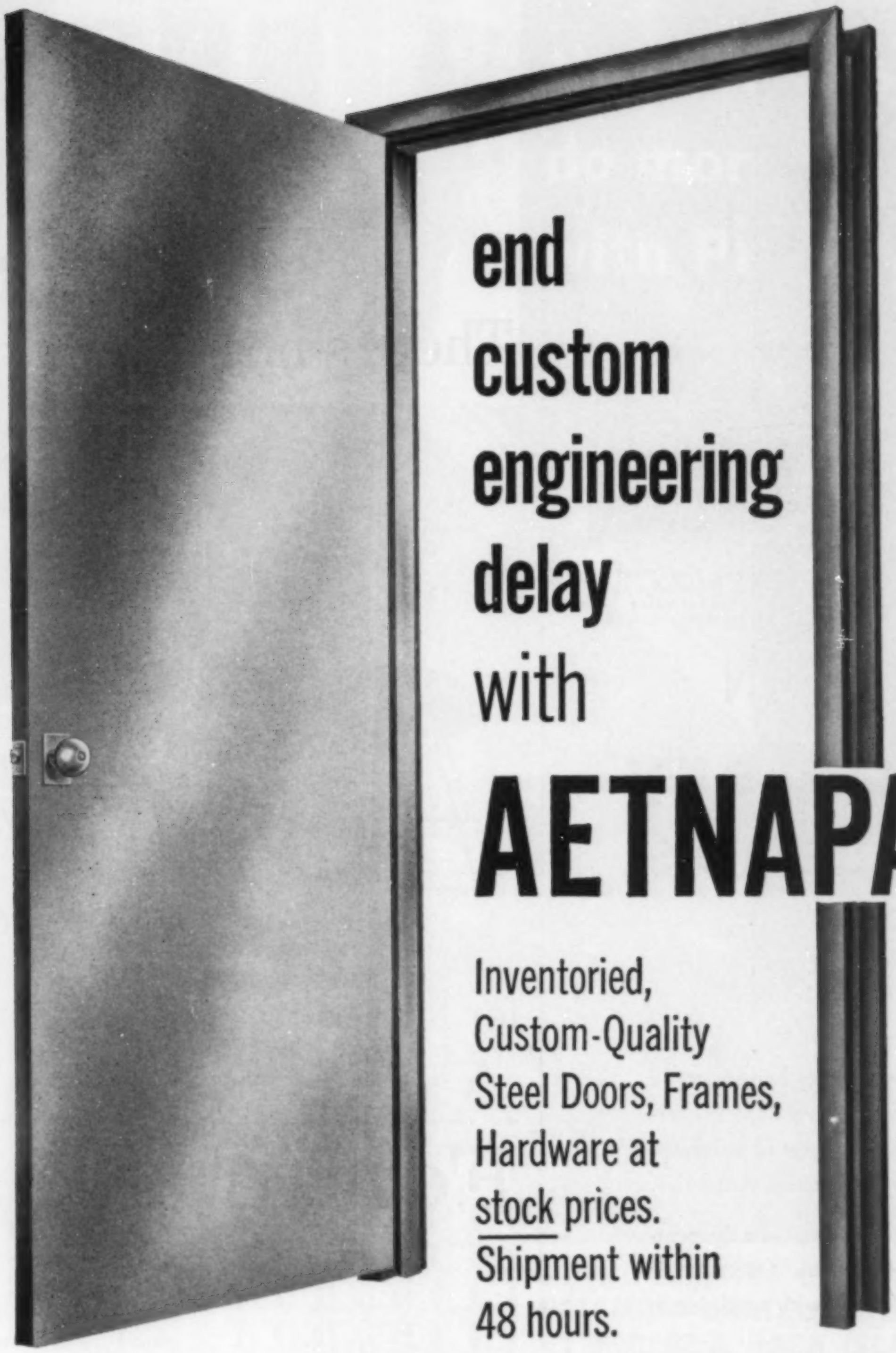

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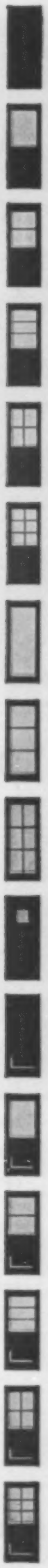

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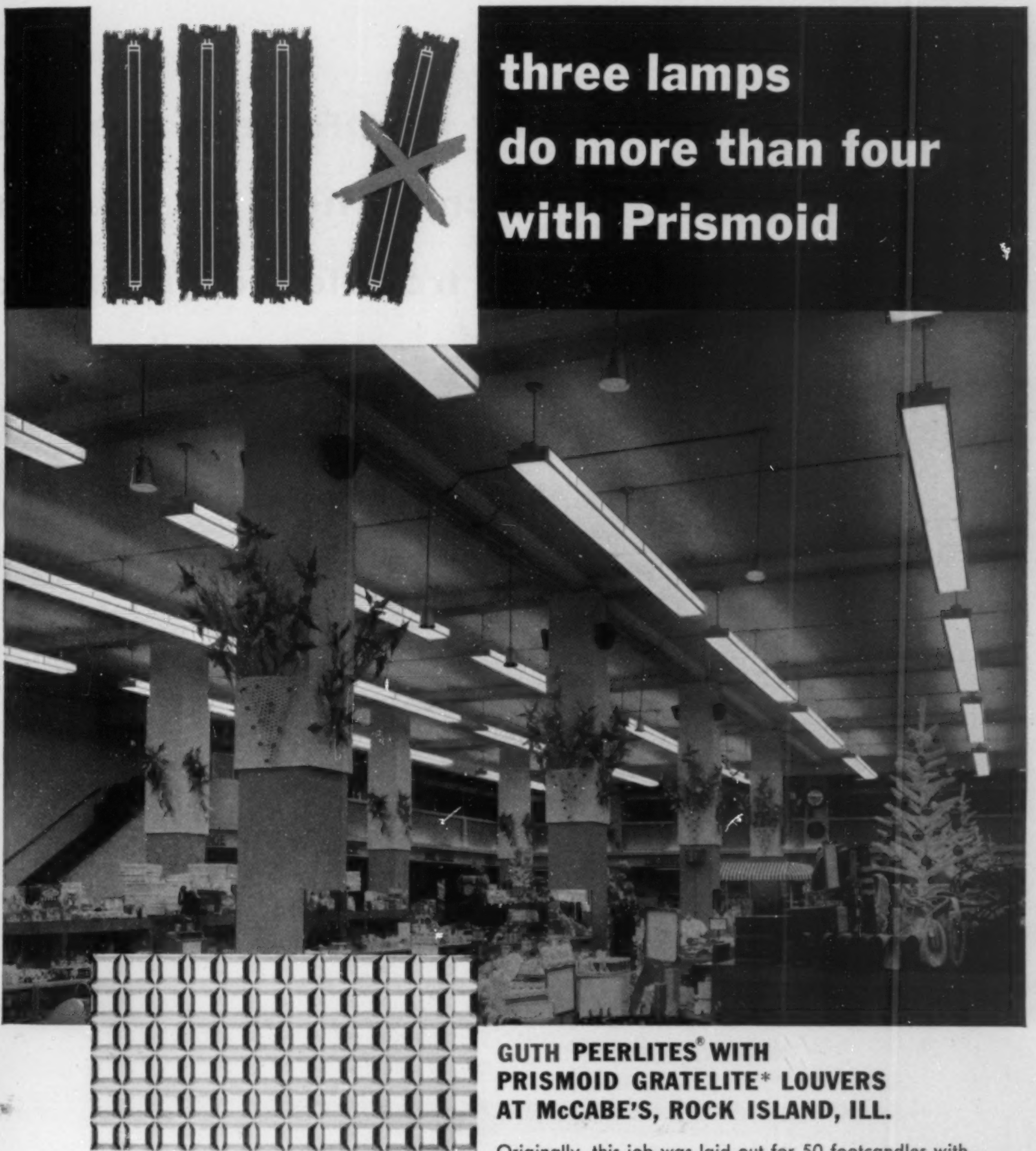

three lamps do more than four with Prismoid

GUTH PEERLITES® WITH PRISMOID GRATELITE* LOUVERS AT McCABE'S, ROCK ISLAND, ILL.

Originally, this job was laid out for 50 footcandles with Brand X fixtures (4 lamp—75 watt).
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Result: 100% more light than with the 4-lighters!
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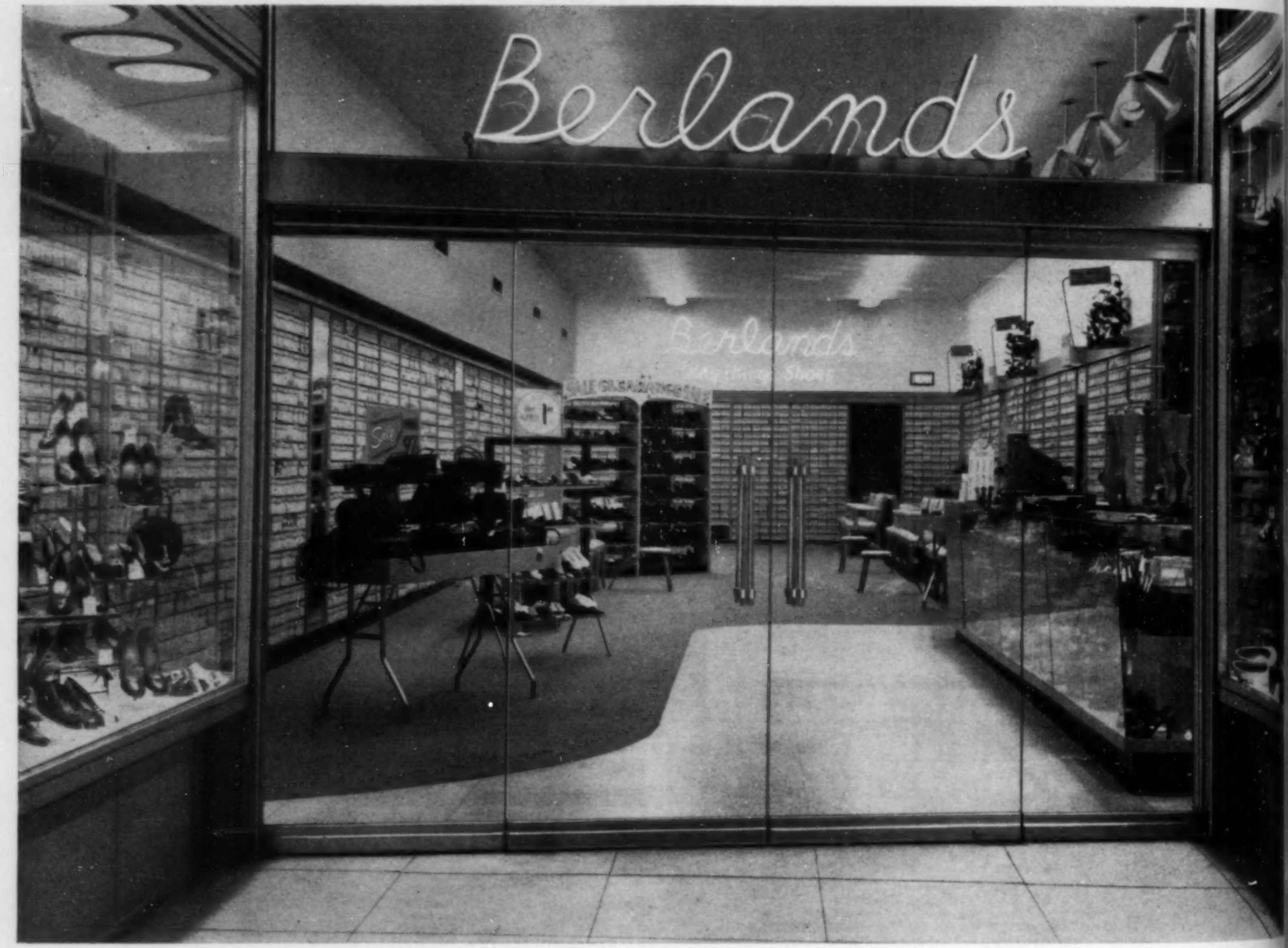
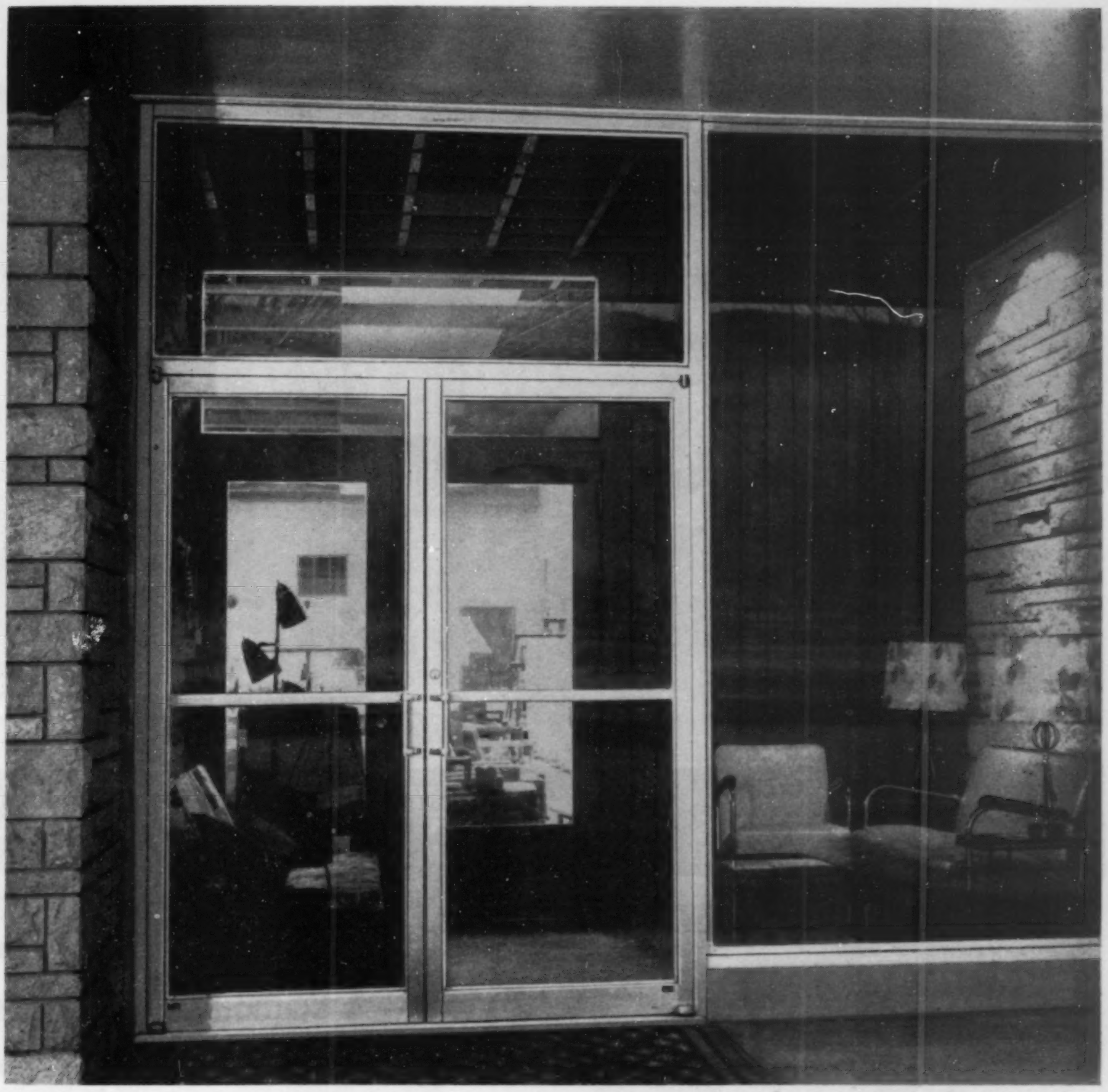


HERCULITE®—This entrance to Berlands, well-known women's shoe store in Memphis, Tennessee, underscores the effectiveness of Pittsburgh HERCULITE Doors and Polished Plate Glass in creating an open-vision design of immediate appeal. People like to deal in a shop where the atmosphere is "airy" and light. That is why more and more architects and building owners are demanding HERCULITE Doors—whether in new buildings or in remodeling work. Four times stronger than ordinary glass of the same thickness, HERCULITE is ideal for entrances of all kinds.

Architects: Benjamin Shapiro & Robert Tisdale, St. Louis, Mo.



TUBELITE®—In the new Home Furniture Store, Winona, Minnesota, TUBELITE Doors and Pittsburgh Polished Plate Glass were used as a basic element in the architectural plan. TUBELITE Doors and Frames are noteworthy for their adaptability to almost any design requirement. That's because of their clean, simple lines which are clearly indicated in the illustration above. TUBELITE represents a distinct advance in hollow metal entrance design. It has an exclusive interlocking feature, assuring the greatest rigidity. Architect: Edwin O. Eckert, Winona, Minn.

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Sweet's Architectural File—Sections 16a and 16d—contains complete information on Pittsburgh Doors. Should you require further and more detailed facts on these doors, simply address a letter to Pittsburgh Plate Glass Company, Room 8229, 632 Fort Duquesne Boulevard, Pittsburgh 22, Pennsylvania.

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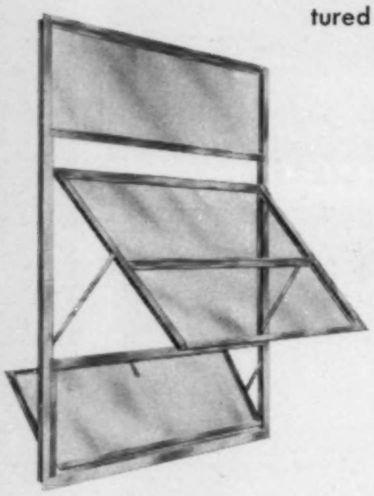

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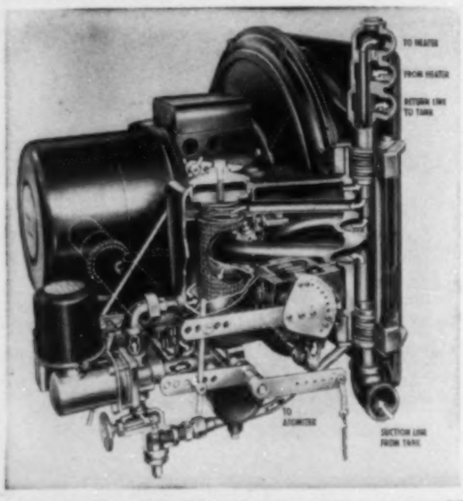

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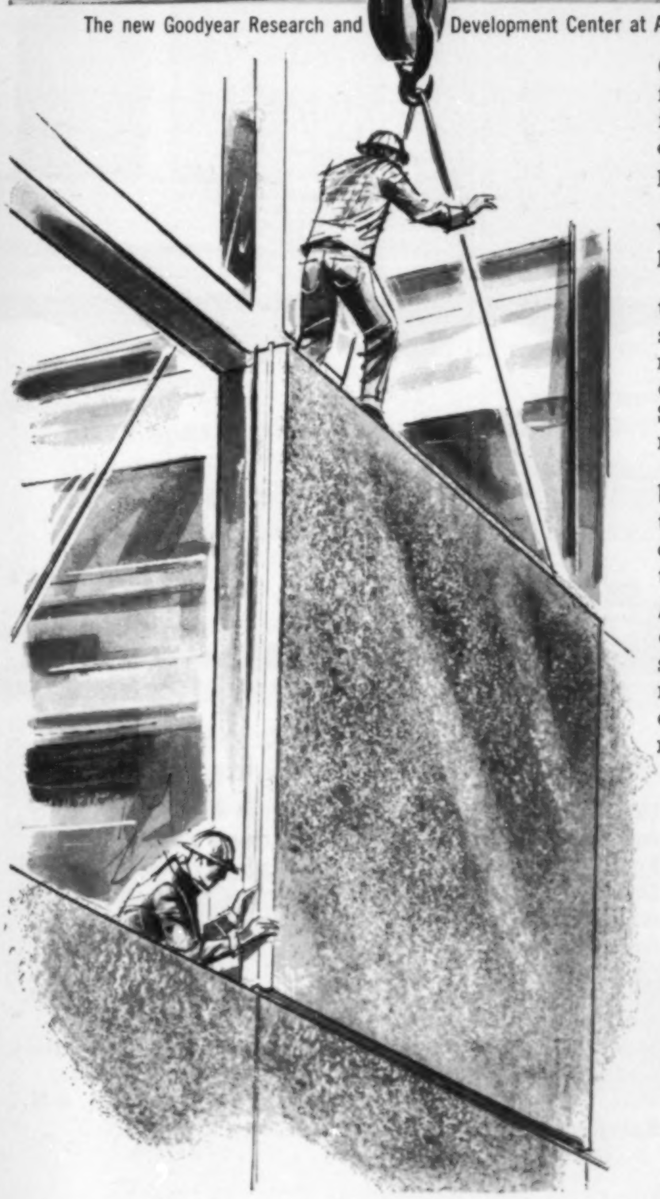

Complete design flexibility and choice of many textured finishes make Marietta concrete wall panels extremely functional for buildings of every type. When used alone or in combination with other building materials they present a clean, modern appearance.

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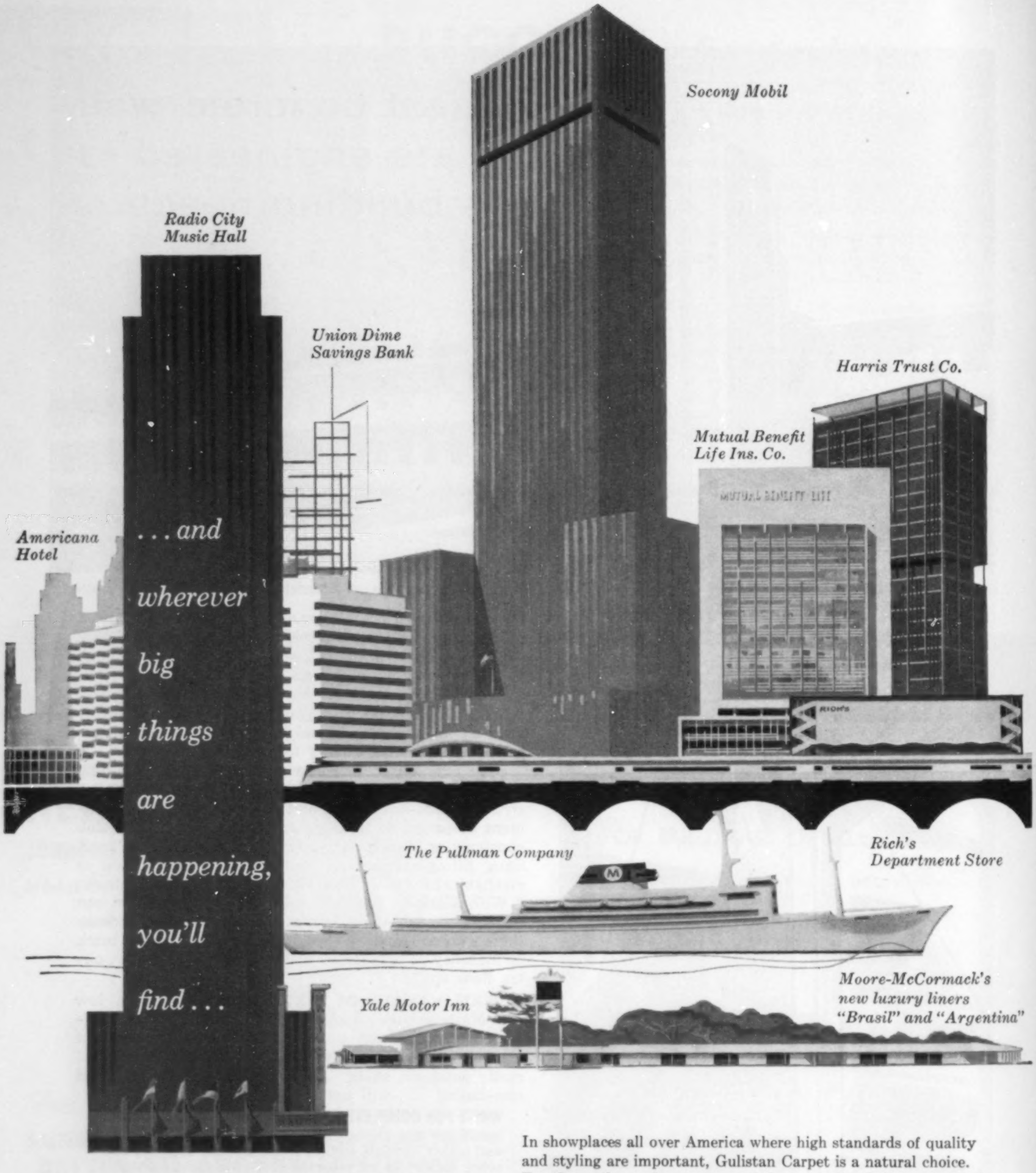
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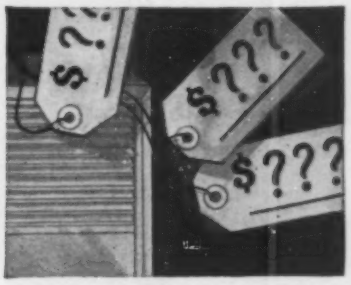
You can't measure the real cost of air conditioning by the price tag on the equipment

Real cost depends on long-term savings versus long-term expenses



Specify Airtemp today, and ten years from now your client will still be grateful for your good judgment. It's the finest air conditioning he can buy. Yet it's also the least expensive. Year after year, Airtemp will cut your client's expenses by reducing the 3 "secret costs" of air conditioning to a minimum.

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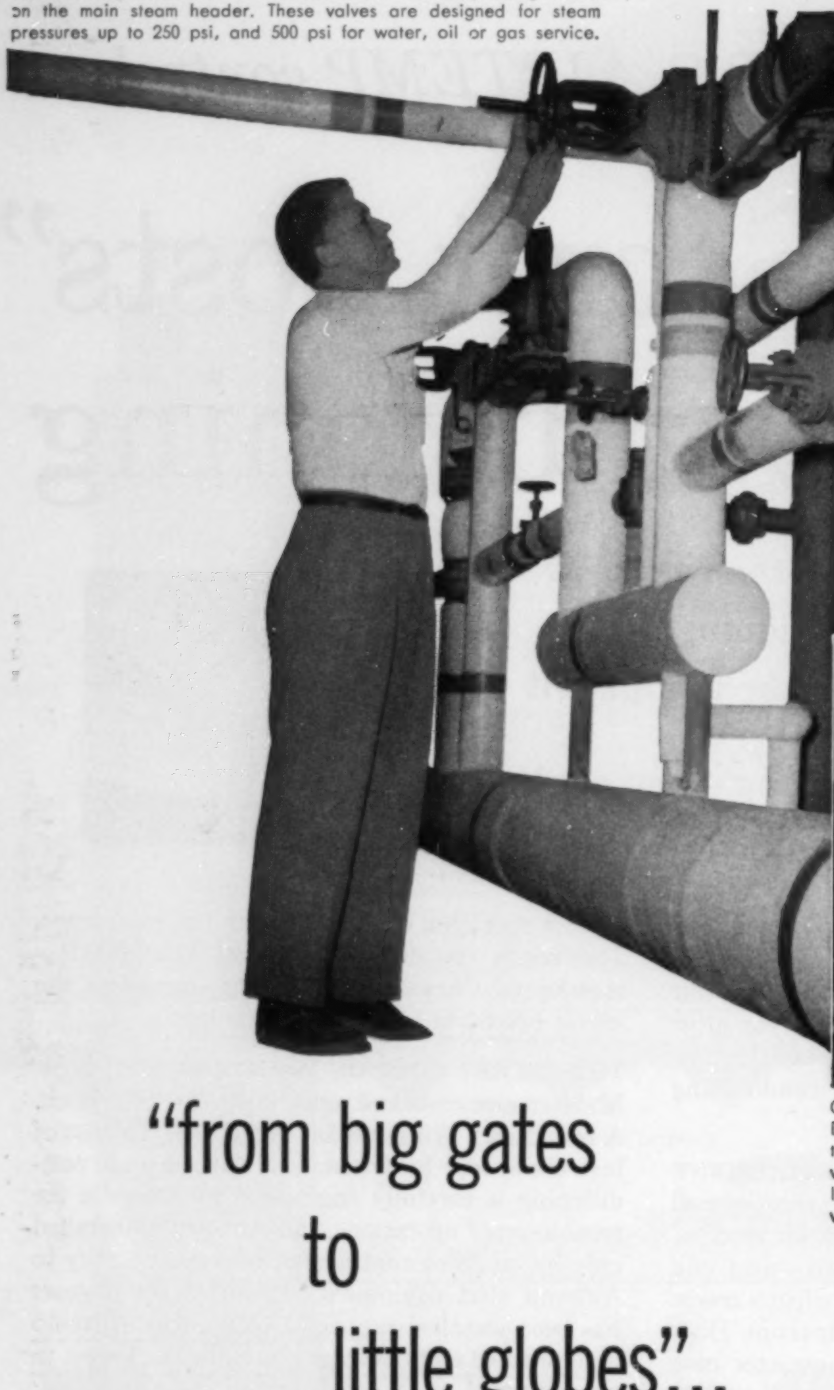

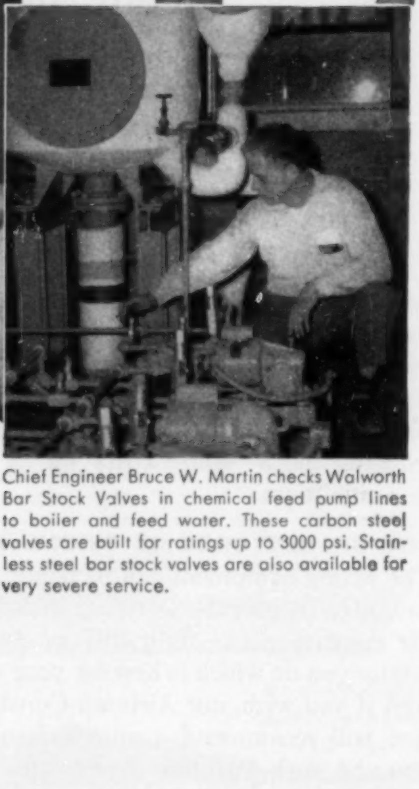

Chief Engineer Bruce W. Martin checks Walworth Bar Stock Valves in chemical feed pump lines to boiler and feed water. These carbon steel valves are built for ratings up to 3000 psi. Stainless steel bar stock valves are also available for very severe service.

"from big gates to little globes"...

The power plant at the Michigan School for the Deaf has an operating capacity of 25,000 lbs. per hour generated by three 200 hp and one 60 hp oil-fired boilers. Built four years ago, the plant is now the responsibility of Chief Engineer Bruce W. Martin who says: "This plant was designed and constructed for efficient operation, and a lot of that efficiency depends on the valves. From big gates to little globes installed here, we use a wide variety of Walworth Valves. They give us the dependable, trouble-free service we want and expect. I would recommend them to anybody for similar service."

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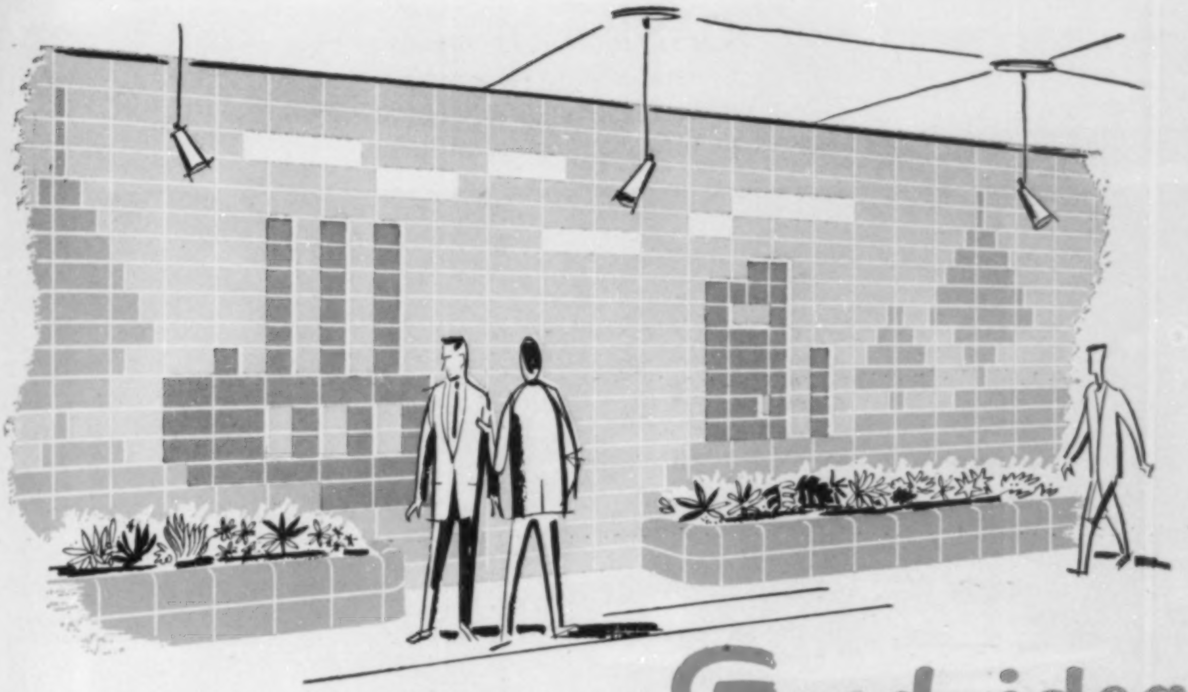

Good idea

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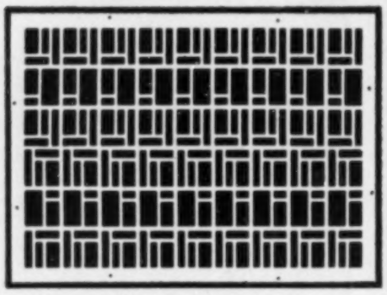

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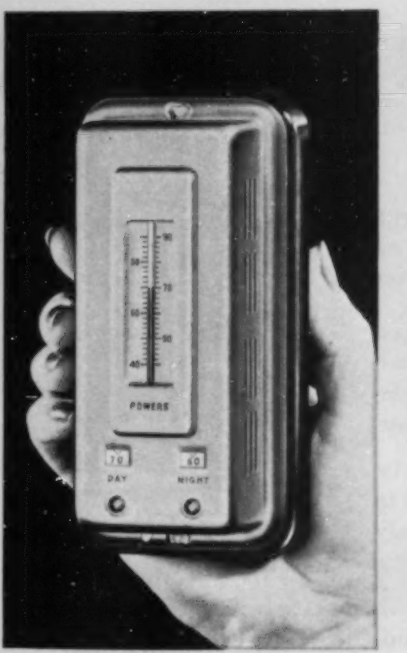
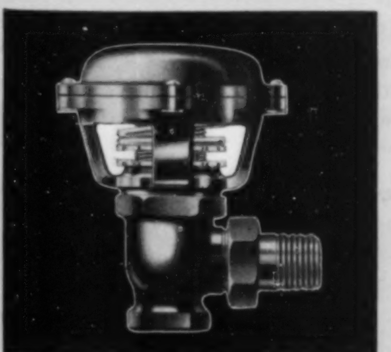
Engineers and Taxpayers



Powers DAY-NIGHT Thermostats are adjustable for normal temperature during occupancy and lower economical temperature during unoccupied periods.



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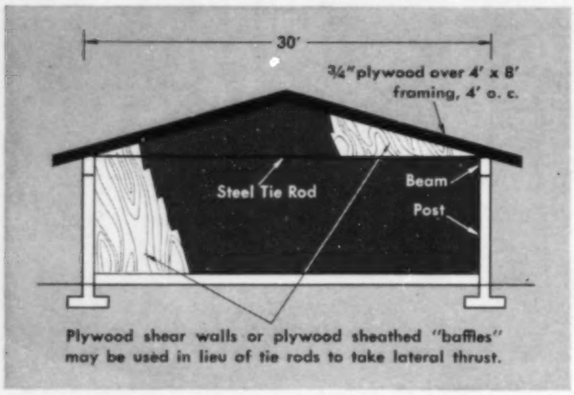
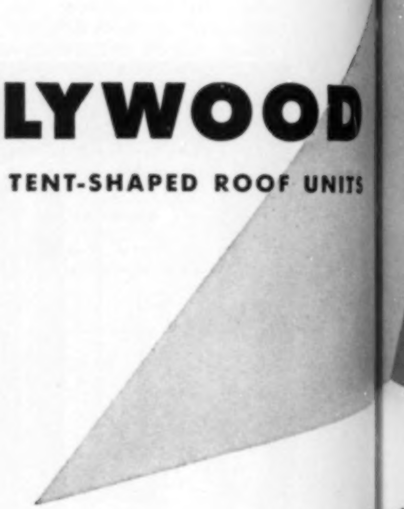

30'
¾" plywood over 4' x 8' framing, 4' o. c.
Steel Tie Rod
Beam
Post
Plywood shear walls or plywood sheathed "baffles" may be used in lieu of tie rods to take lateral thrust.

Tilted roof planes (each a rigid plywood diaphragm) provide mutual support at ridge, permit long, clear spans. Diaphragm action transfers horizontal thrust to steel ties or fir plywood end walls.

FIR PLYWOOD

TENT-SHAPED ROOF UNITS

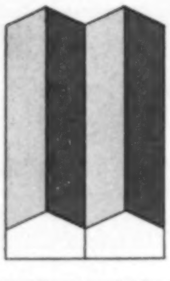


ARCHITECTS AND ENGINEERS:
John Lyon Reid & Partners, San Francisco, Calif.
Partners in Charge: William A. Gillis, A. I. A.,
and Dr. Alexander Tarics, Structural Engineer

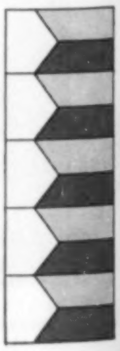
THIS folded plate plywood roof system developed for an expandable community school offers a straightforward solution to the problem of obtaining a high degree of design flexibility at low cost.

The basic tent-shaped canopy units may be placed separately or combined in series or rows to cover any given area. With supports needed only at wide intervals, walls and partitions may be arranged or re-arranged as needed.

Structurally, the system relies on the outstanding diaphragm strength of the plywood sheathing. The roof planes—each a rigid plywood diaphragm—are inclined to form a giant inverted "V" beam, eliminating posts or trusses normally required for support under the ridge. Because the roof is self-supporting at the center, rafter spans can be nearly doubled, e.g., up to 50 feet with 4 x 14's on four foot centers. Diaphragm action also permits ties and supporting columns to be placed at wide intervals.



Basic units can be arranged in series or rows as needed



ONE OF A SERIES FROM "SCHOOLS OF THE FUTURE"

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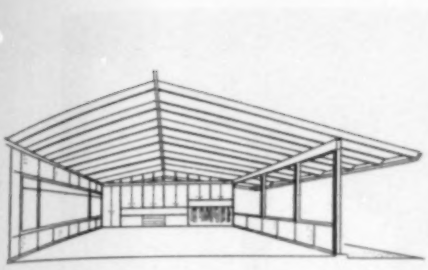
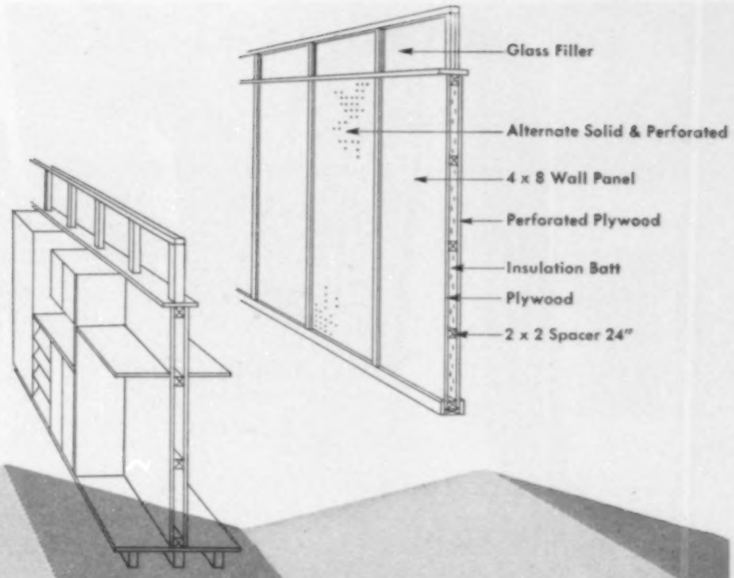
Also write for information about design and engineering consultation services.

SCHOOLS of the future



The interior may be left open for classroom uses
. . . or divided into smaller areas by movable partitions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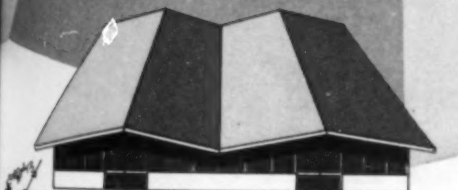
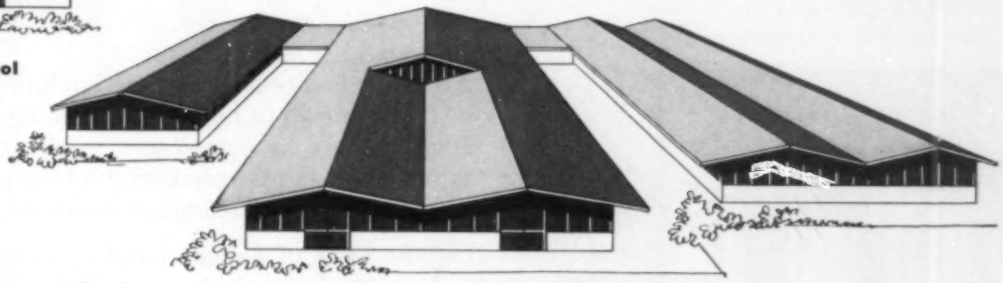
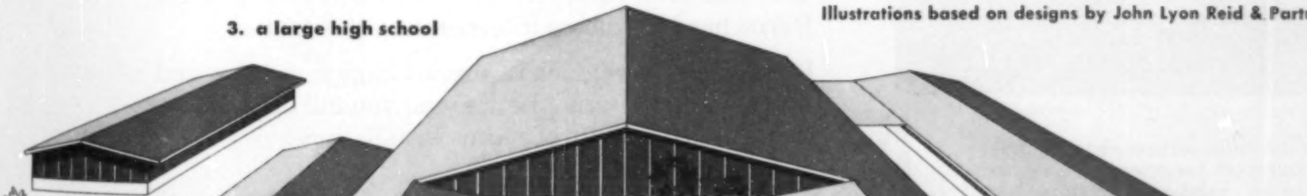


1. a small elementary school

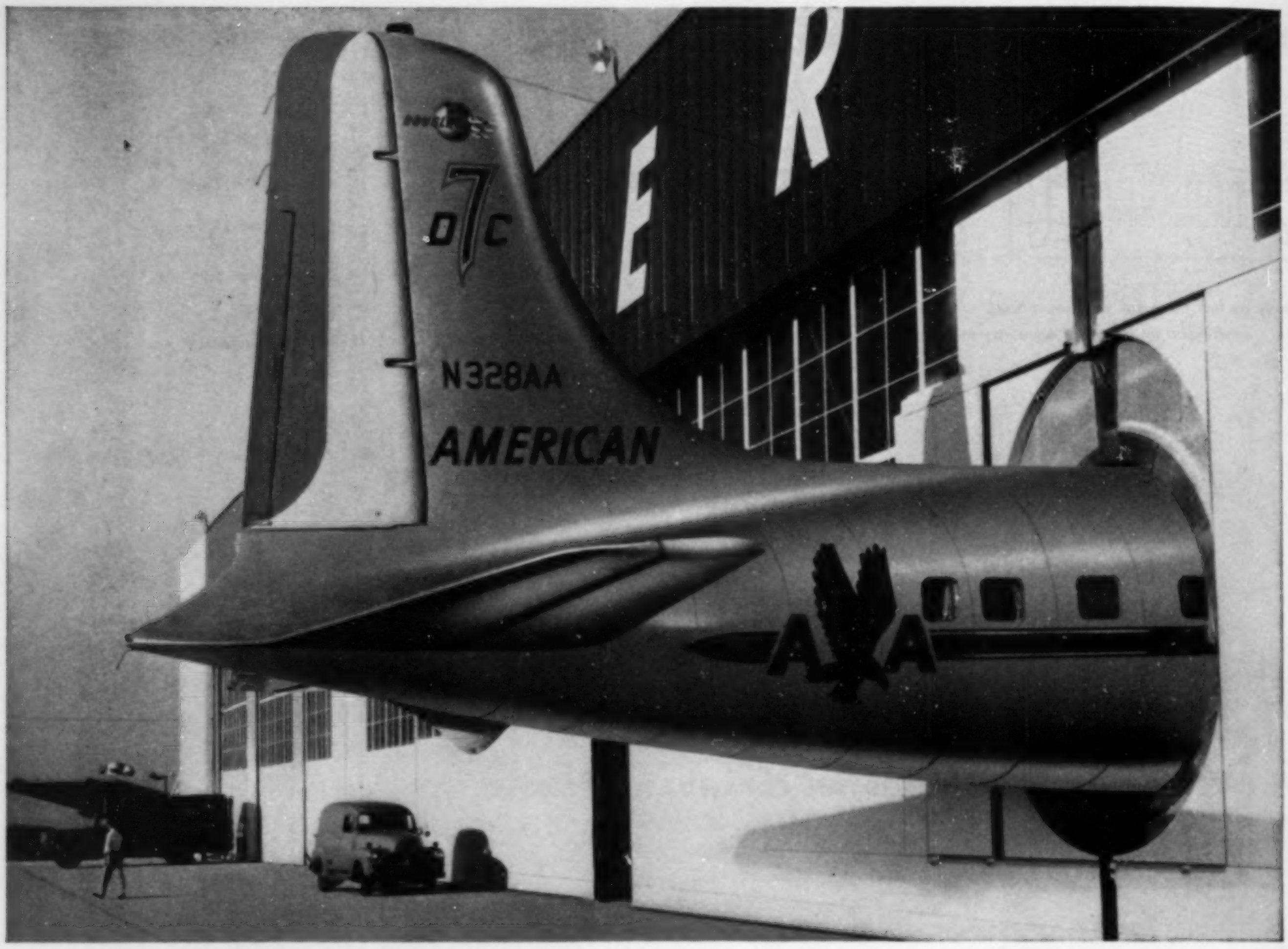


Units can be added as needed

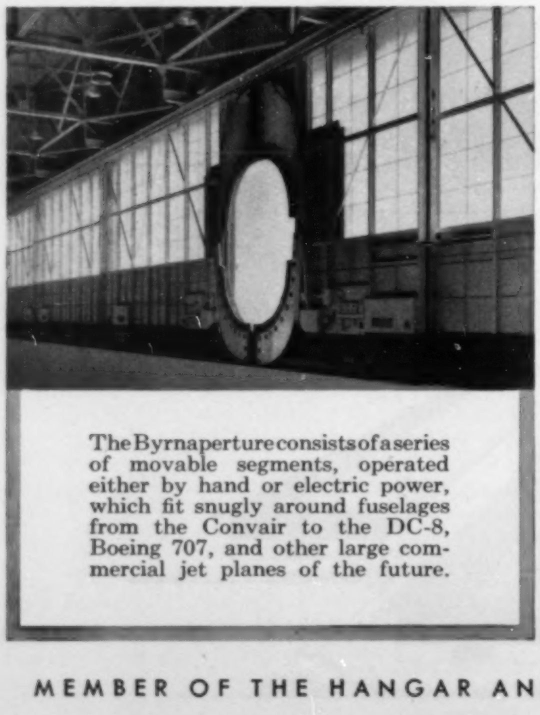
3. a large high school



Illustrations based on designs by John Lyon Reid & Partners



Airplane Hangar Construction Costs Cut 25% to 33% with the BYRNAPERTURE



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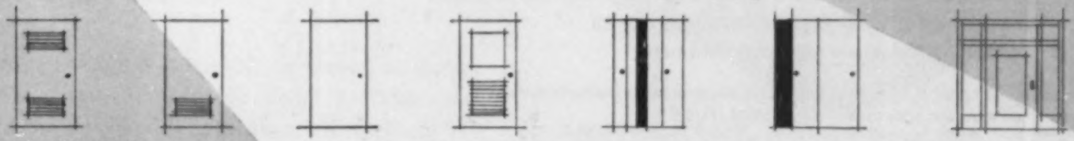

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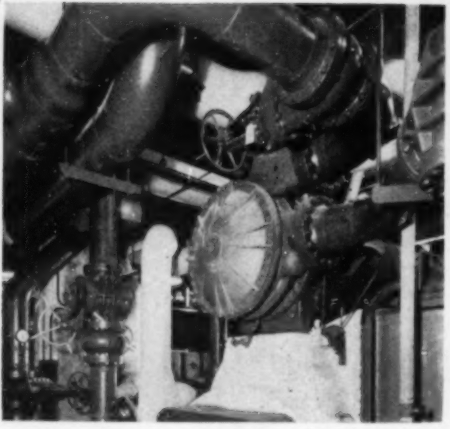

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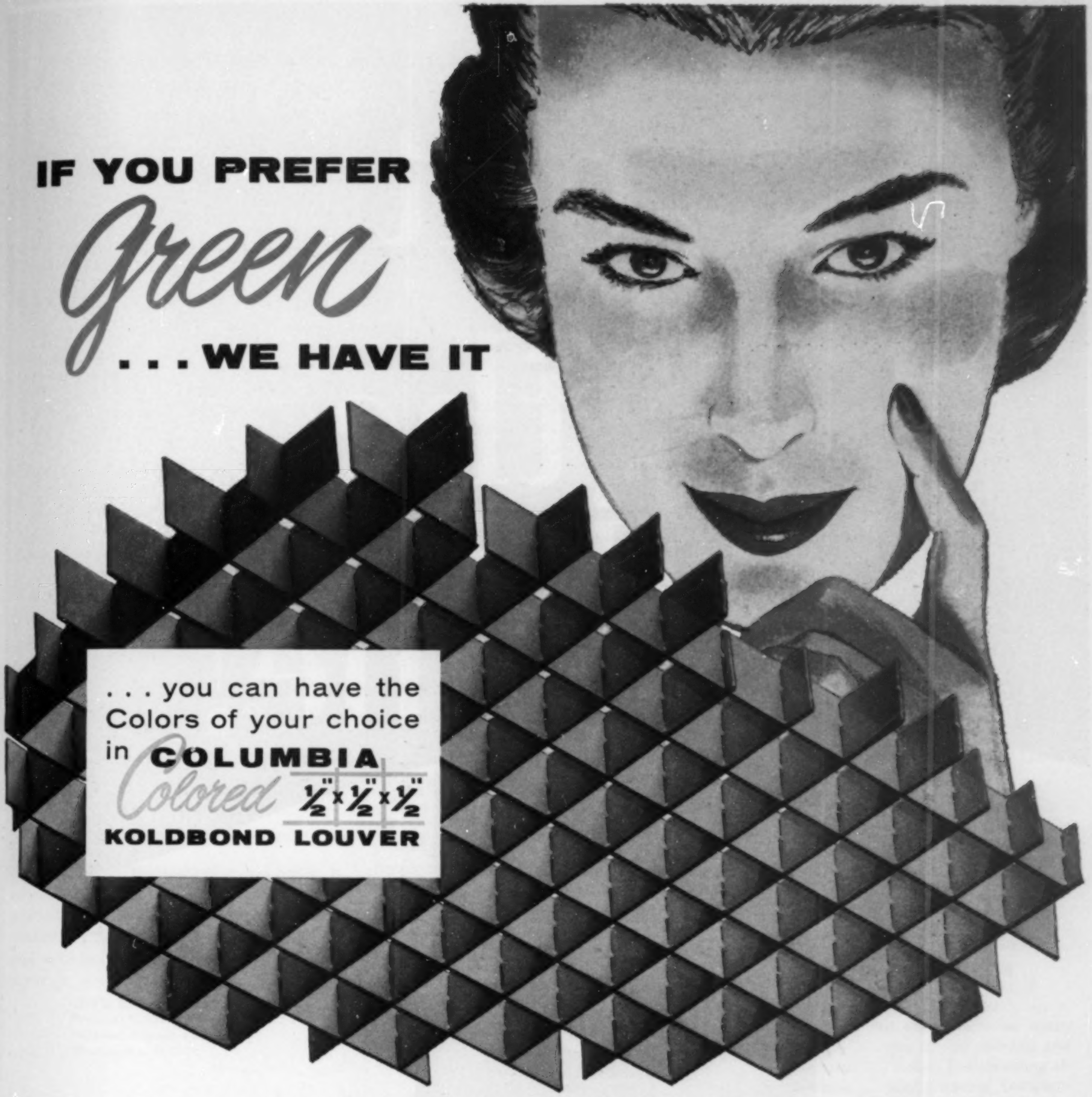

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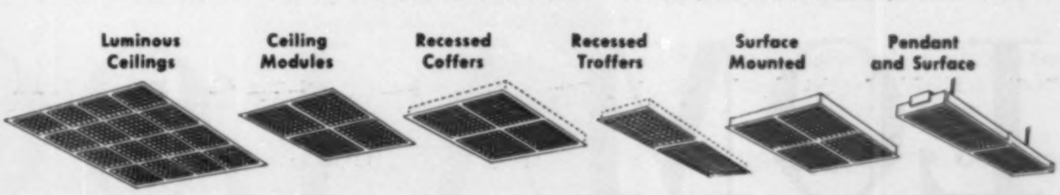
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Reader comment on recent issues

BUILDING RESEARCH

Forum:

I do not think that the state of building research (FORUM, May 1958) is quite so sad as you imply, but I agree that there is urgent need for research in many areas of building science.

In particular I strongly suspect that there is basic information available which has not yet been successfully utilized. There is, for example, a large fund of fundamental physical data on the source and methods of transfer and methods of control of heat, sound, and moisture. However, much of this information exists in the form of separate investigations which may have had no initial connection with the building industry. The most urgent need is for application research which will dig out the information which is available and apply it to the design and performance of actual building structures.

J. S. PARKINSON
Johns-Manville Products Corp.
Manville, N.J.

Forum:

Personally, I think FORUM has taken a courageous step in the right direction in advocating more research. Only when the profession itself engages in self-analysis and criticism can progress be made in the direction your article suggests.

GENE M. NORDBY
Program director for engineering sciences
National Science Foundation
Washington, D.C.

PACKAGE DEALERS

Forum:

Your article "Those Worrisome Package Dealers" (FORUM, April 1958), in the part referring to commercial buildings, reads "The biggest part of the business architects have lost in this field has gone to one firm, Bank Building & Equipment Corp., which in terms of design is probably the most criticized of all package dealers. (Bankers seem to be notoriously easy targets for poor architecture.)"

As chief designer of this corporation, I am professionally responsible for the quality of the designs we produce. However, instead of making self-defense of something intangible as design qualities, I'm taking the short cut and sending you photographs of the current buildings (not special) we designed, for you to judge the design quality on its own merits—good or bad.

W. A. SARMIENTO, *director of design*
Bank Building & Equipment Corp. of America
St. Louis, Mo.

■ *Three of the photos submitted by Reader Sarmiento are shown below.*—ED.

HOUSING POLICY

Forum:

During the past few years, FORUM has consistently taken a very responsible interest in the future of America's cities. I congratulate you on your past performance.

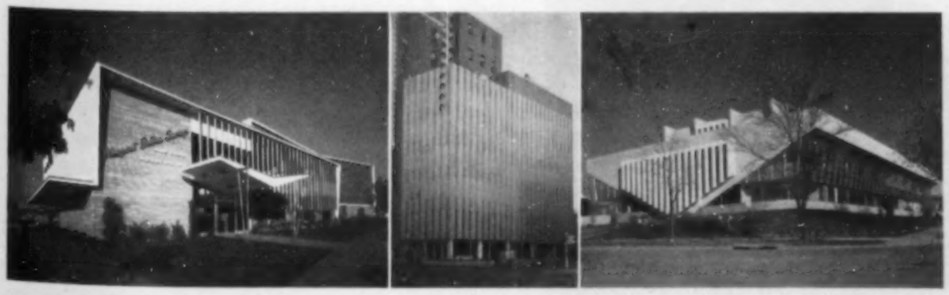
However, I was somewhat concerned by that part of your March article entitled, "A sound housing policy—now," which dealt with aid for urban renewal. Your recommendation to "reduce federal responsibility" is, in my opinion, a complete negation of the "basic goals" you set forth.

GEORGE CHRISTOPHER, *mayor*
San Francisco, Calif.

Forum:

My congratulations on a fine all-around piece on federal housing policy. Your six

continued on page 70



Three designs by Bank Building & Equipment Corp. (left to right): Balboa Savings & Loan in Newport Beach, California; City Federal Savings & Loan in Elizabeth, New Jersey, and American Investment Co. in Clayton, Missouri.

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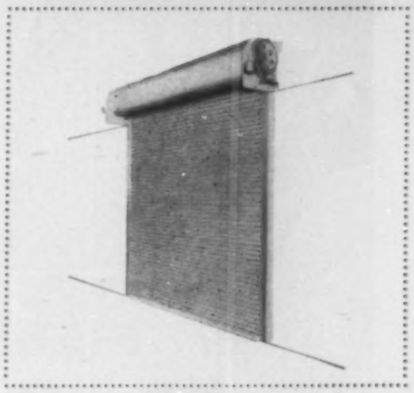
fire doors



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The Forum
cont'd

goals of housing and renewal policy appear to provide an excellent framework for comprehensive national legislation.

OLIVER C. WINSTON, *director*
Urban Renewal and Housing Agency
Baltimore, Md.

Forum:

I agree wholeheartedly with your goal that there must be an urban renewal program with a great measure of continuity. If this is to be the case, it is unwise to try to turn the matter over to the states, for there will then be neither financial help nor much leadership for urban renewal. The past performances of states in aiding the urban renewal program do not support the view you have taken.

FRANK P. ZEIDLER, *mayor*
City of Milwaukee
Milwaukee, Wis.

Forum:

Forum's call for a sound housing policy is to be commended. I must take strong exception, however, with the proposal to reduce federal responsibility in urban renewal.

There is no assurance that a rural dominated state legislature, even given funds, would permit the carrying out of an effective urban renewal program by the large cities. Based on our experience in Pennsylvania, where the legislature is ignoring the constitutional mandate to reapportion, a city like Philadelphia would receive a far smaller share of any funds than it is now receiving from the federal government, or which it would be entitled to based on need or soundness of program.

Keep up the good work in fighting for more effective renewal programs.

RICHARDSON DILWORTH, *mayor*
Philadelphia, Pa.

END

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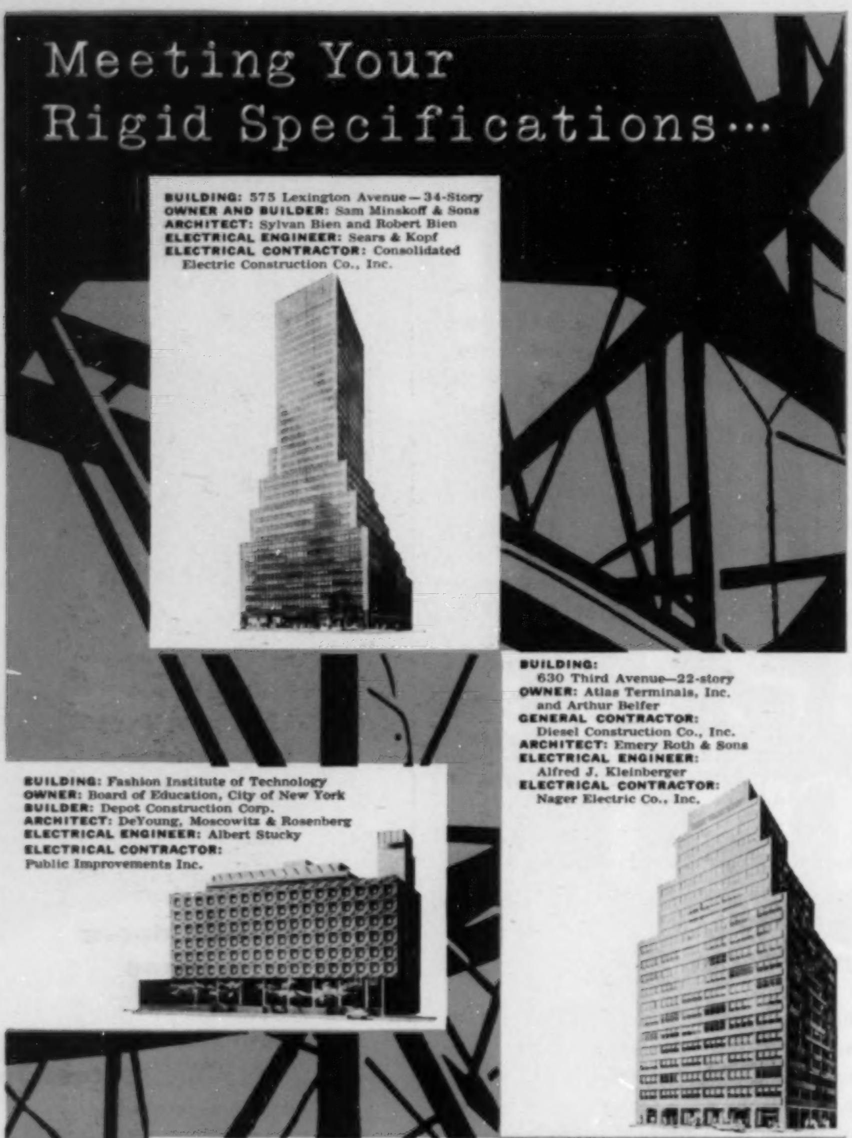
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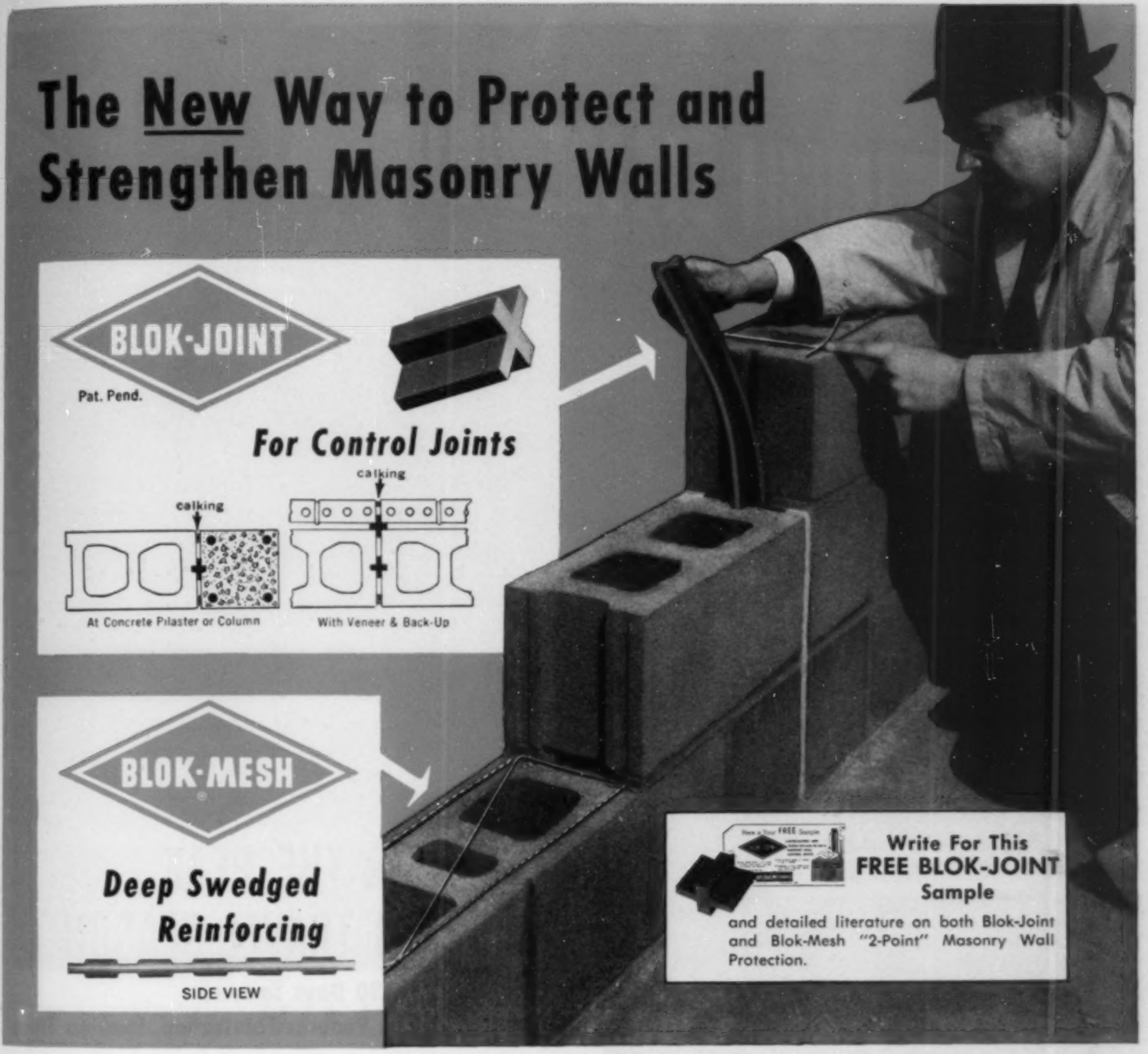

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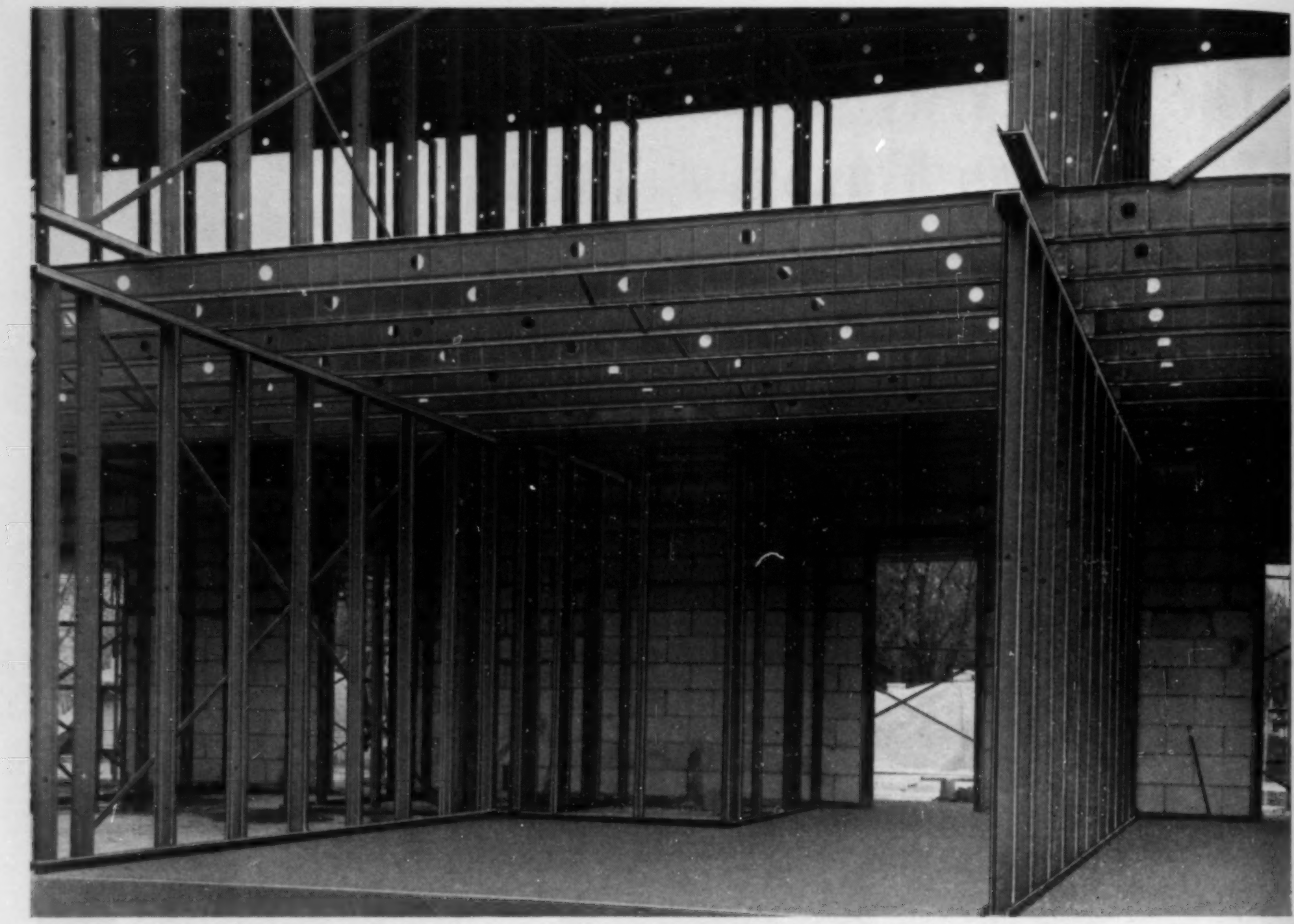
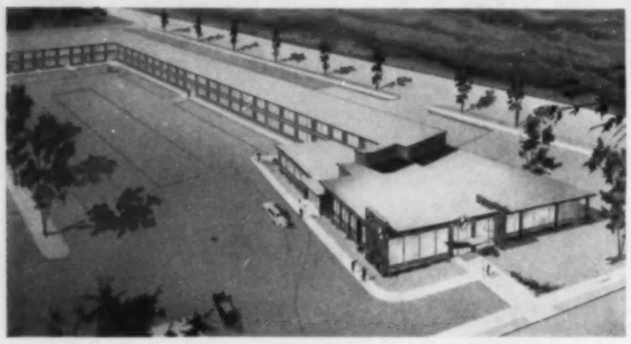


Strong, lightweight and nailable, Stran-Steel framing saved time, labor, and materials in this 138-unit multi-floor motel.



Towne House Motel, Rochester, N.Y. Michael J. DeAngelis, Architect; Donn DeAngelis, Designer

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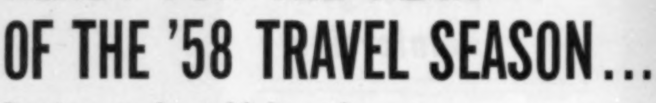

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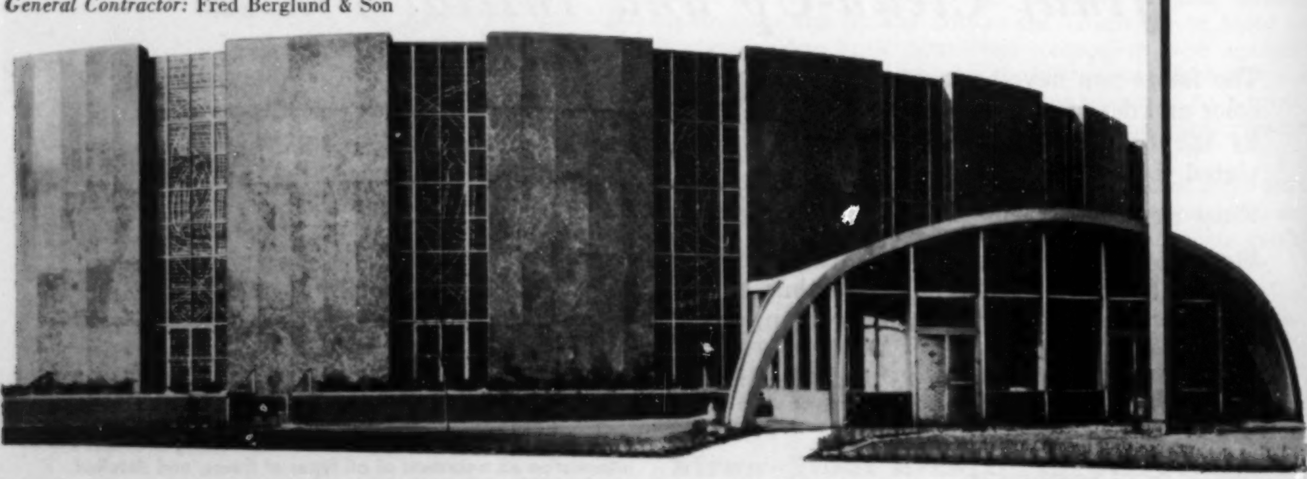

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Editorial

Constant restoration

Returning last month from a trip to Europe, Architect Ralph Walker, AIA's centennial medalist, reported not on such events as the Brussels World's Fair but on talks with European restorationists of historic buildings.

Eric Bedford, chief architect for the Ministry of Works, told Walker that about 90 per cent of the ornamental stonework on the Houses of Parliament and about 80 per cent of the tower that holds Big Ben has been replaced, and that Salisbury Cathedral is held together by hidden iron bands which expensively but convincingly hold the fabric in its original character, the money having been given by Americans.

These monuments stay authentic. This is because the European habit of revolving restoration, constantly at work whenever replacement is needed, reproduces each stone as faithfully as possible, and in the same place, even if elaborate hidden metal cramping is required to strengthen the fabric. And a point is made of using the same variety of stone, even if stronger, more durable varieties are now available.

"Why do you take such trouble with your old buildings?" asked Walker.

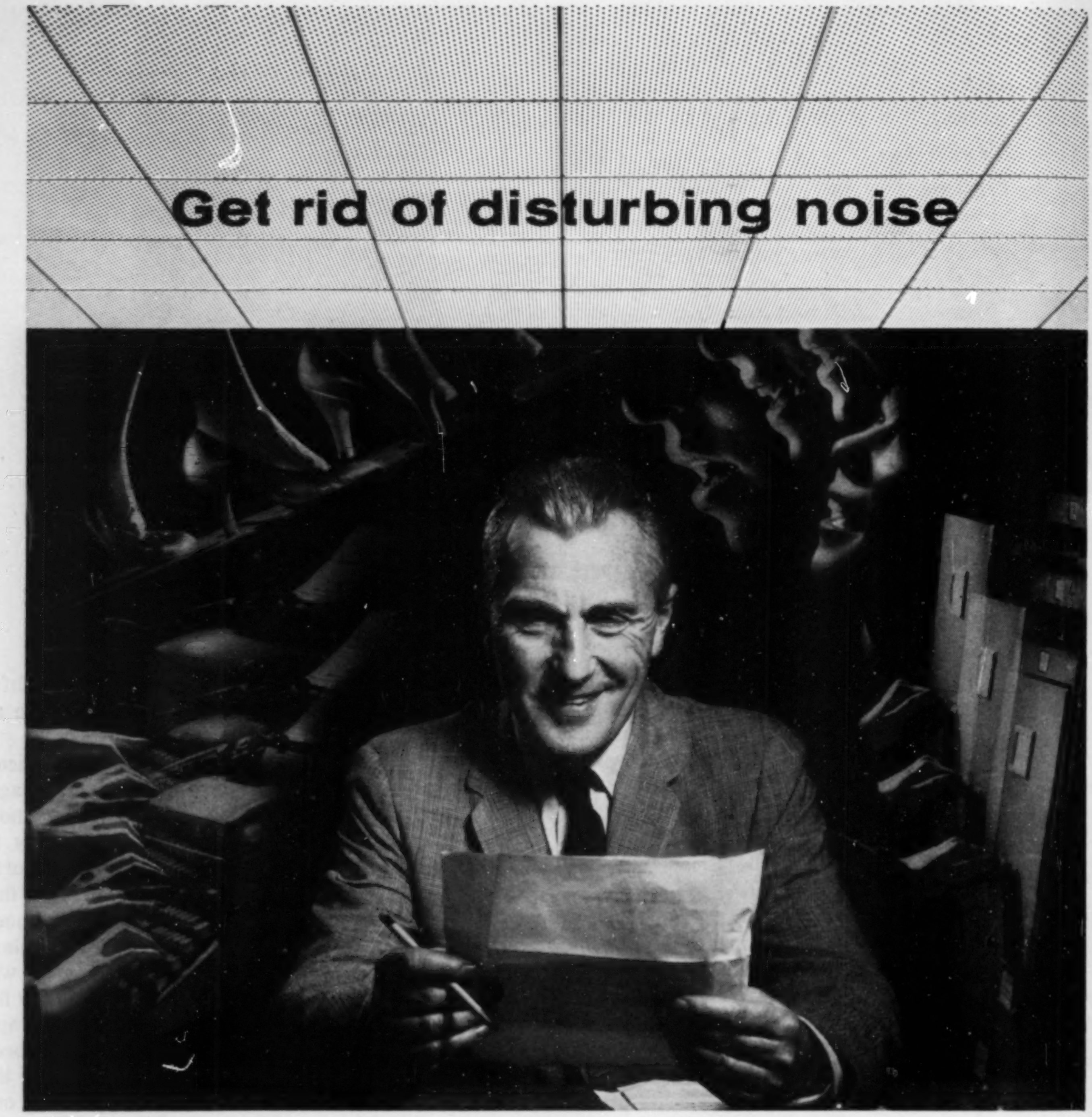
"Because we love them," was the simple answer, "so we stay faithful to them and keep them as close as possible to the way they are."

The heedless, youthful American civilization, suddenly come of age, can use counsel of this sort, now that it has a historical memory to preserve (see "Architecture worth saving," page 93). Acquiring a fine monument carries at least as much obligation as bringing home a plant which will thereafter be fed, watered, pruned, and tended, not by fits and starts but faithfully and always.

This has scandalously not been done, Walker went on to say, in the case of such fine old growths as our own U.S. Capitol, but it is not too late to start now. And Walker is opposed to doing it by erecting a new replica of the East Front, no matter how "exact archaeologically," in a new material—marble—with a new different color and a different relationship to the rest of the building, chiefly the dome.

The handling of historical monuments involves the most delicate questions of tact and judgment, and also the true critic's attitude toward schools of architecture. "Above all the gods is necessity," said the Greeks, and above all schools of architecture is architecture. There is

continued on page 77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no better university than restoration, but alas few architects have yet disciplined themselves to it. Walker's approach is appropriately sensitive and thoughtful.

The hidden dissuaders

The federal government's tremendous influence on the U.S. economy sometimes manifests itself in strange and inscrutable ways. High tariffs obviously discourage imports, but so, in a more subtle way, does the labyrinth of U.S. customs procedure. The same applies in the field of building; the impact of government policy is sometimes direct, sometimes circuitous, and sometimes not even intended.

The article, on page 101, for example, reports how present federal tax policies tend to encourage suburban home building and to discourage the construction of rental housing. But there are other laws and administrative procedures that discourage the construction of rental housing in more subtle ways. Consider, for example, the federal government's procedure for insuring mortgage loans.

The appraisal of income producing real property for mortgage financing in the private money market often entails a good deal of ritualistic hocus-pocus designed to give legal sanction to a loan valuation actually arrived at by other means. For, as a practical matter, most loans are based primarily on the amount of money which the lender believes safe to lend from the point of view of the earning power of the property and the credit standing of the borrower. In such cases the formal "appraisal" of the property's value may be simply the end of the process rather than the beginning — the ornament rather than the substance.

In conventional lending these facts are well understood and broadly accepted. They do little harm other than to mystify the uninitiated and add complexity to an inherently complicated business.

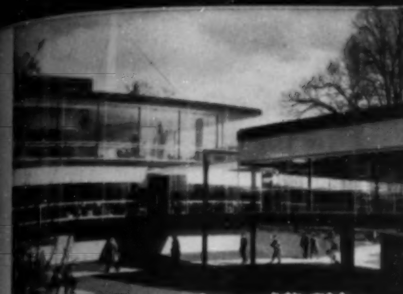
But when the Federal Housing Adminstration insures mortgages on rental housing property, the situation is quite different. In this case the symbol is often mistaken for the substance. According to FORUM Consultant Miles Colean, at FHA the valuation hocus-pocus is taken very seriously, and the appraisal process is formalized into a pseudo-exact measure of value. This mechanically-arrived-at—and largely artificial—"value" becomes the final determinant of the loan amount.

Often, the net effect of this stilted procedure, says Colean, is to make it difficult for potential builders—particularly of rental housing—to secure FHA insurance in sufficient amounts to make their projects commercially feasible. If FHA simply determined mortgage maximums on the basis of realistic judgment estimates of the amount of loan that each property could reasonably be expected to carry—just as private lenders do—a major, hidden obstacle to rental building would be removed.

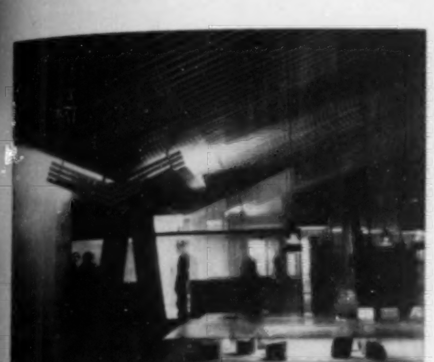
In such an approach the realty "valuation" process plays a negligible part. The most important consideration is: in view of the best judgment estimate of future market and economic conditions, and the characteristics of the property, what could the property be assumed to earn per annum over a period of years, after deducting operating expenses, taxes, and appropriate reserves? This residual amount, interpreted in terms of the going rate of interest and an acceptable amortization, would set the maximum limit of the loan. The actual loan might be any lesser amount—as dictated by the lender's prudence. If the FHA could, or would, adopt this method, its mortgage insurance could, at long last, become a real aid, rather than a hidden dissuader, to the building of urban rental housing.

END

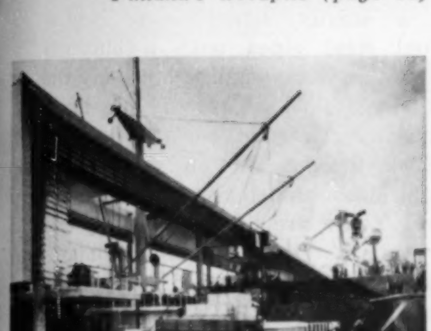
THE BEST AT BRUSSELS



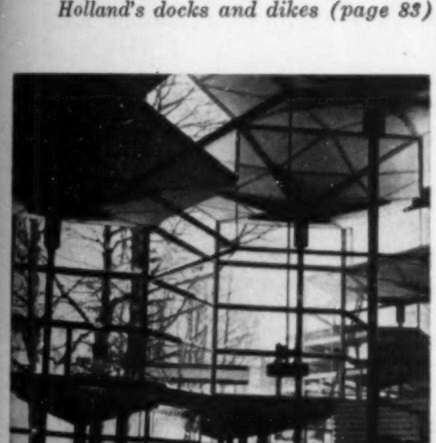
Germany's black necklace (page 81)



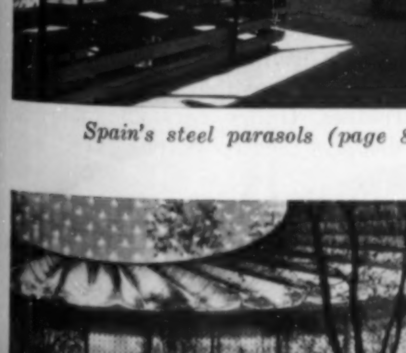
Finland's woodpile (page 82)



Holland's docks and dikes (page 83)



Spain's steel parasols (page 84)



PHOTOS: B. MOOSBRUGGER

The airy U.S. drum (page 87)

Amid all its high-wire stunts and carnival clutter, the first World's Fair since 1939 reveals some unexpected gems of architecture.

BY OGDEN TANNER

Whatever else may be said about the big international exposition now in full swing outside Brussels, it is bound to go down as one of the merriest—and perhaps even one of the more instructive—free-for-alls in the history of architecture.

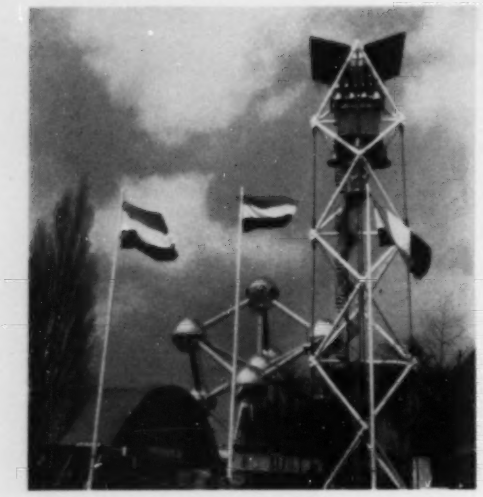
For sheer flamboyance, few of the 30 World's Fairs since London's Crystal Palace Exposition of 1851 —including the most recent one in New York City in 1939—can boast anything quite equal to Brussels' Atomium, a gigantic juggling act of silver spheres, or its "Beak," a weird dinosaur-bird with a cantilevered pointer dreamed up by Belgian engineers for one of their exhibits. Never has a fair produced anything as structurally uninhibited as the huge steel dragonfly of the French pavilion, the little two-horned Paris building, or Le Corbusier's silver-sailed "Electronic Poem"—a Gallic trio that from a distance reminded one British critic of "a serious aircraft accident."

Putting the whole affair together must have caused more than one sleepless night for the coordinating architects: more than 100 "grand manifestations" of all shapes, sizes, and colors were deposited over 435 acres of royal parkland on the Heysel plateau 5 miles north of Brussels. Fortunately, rolling contours and wooded glens here and there lend a soft delight to what is elsewhere a king-size Coney Island.

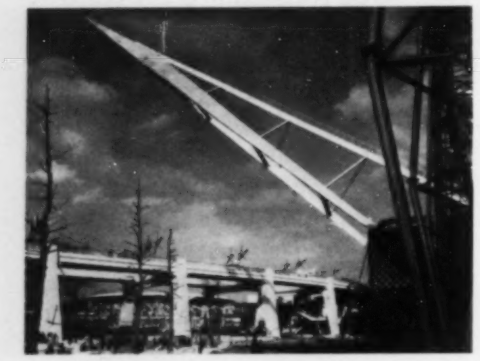
One major lack is well-organized, imaginative open space, and a chance to stand back and see individual buildings. Many of the pavilions create their own pleasant inner courts and gardens. But except for some classical, empty plazas at the main entrances, the only really festive, unifying open space at the fair is that in front of the U.S. pavilion. The Russian, Vatican, and Arab buildings all enjoy this gift, but France and others down the Avenue of Nations are cut off from it by a ponderous pedestrian bridge (see photo, next page).

Once visiting Americans get over their own spectacular pavilion (see page 87), the byways of the Heysel offer some quiet, almost unnoticed gems. In contrast to the huge and strangely menacing Atomium, three gaily flying V's rise above the Gate of Nations (photo opposite), actually a back entrance to the fair. This nameless piece of architectural sculpture, designed by Belgian Architects Guilissen and Koning on the discontinuous tension principle, seems to symbolize gracefully the human aspirations and gravity-defying spirit of the fair. In sharp contrast to the massive technological greenhouse of the USSR, the smaller pavilions of Yugoslavia, Czechoslovakia, and Hungary serve up sleek design (and some of the best food) at the fair.

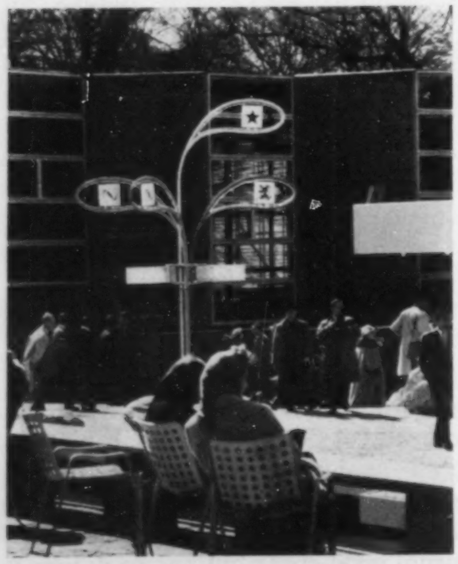
Still fresher architectural ideas are Spain's forest of hexagonal parasols, the Netherlands' ingenious mockup of docks and dikes, Finland's well-fashioned woodpile. (Sadly absent are Finland's neighbors, Sweden and Denmark, and their usual good contributions to design.) And in one corner of the park, West Germany has built a cool black necklace of eight small pavilions—to many visitors, the most polished performance of the fair (see page 81).



1. *Dutch carillon, the Atomium*

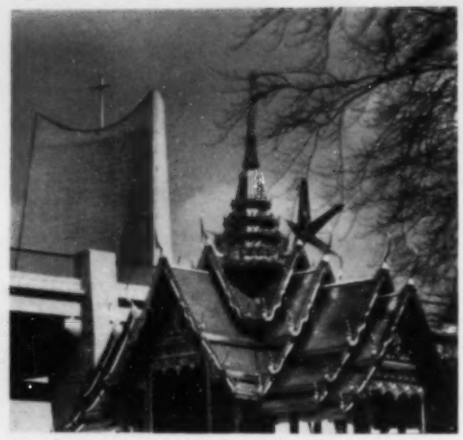


2. *France's spike, Belgium's bridge*

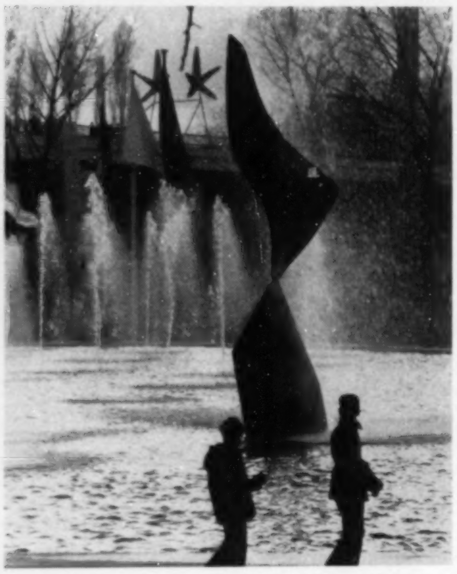


3. *Relaxed girls—and drooping neon signs*

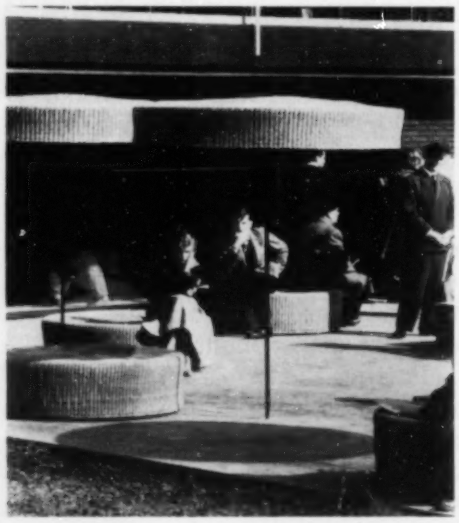
7. *Belgian beaks, both big and little*



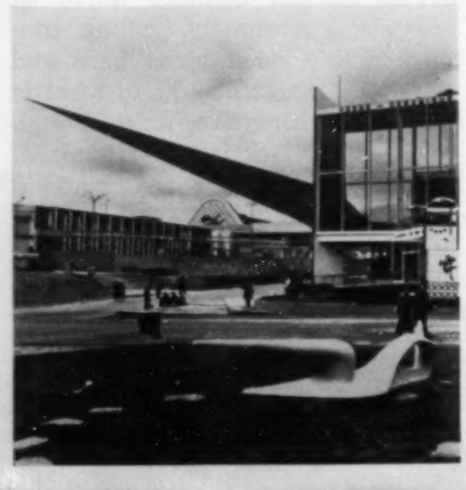
4. *Thai temple, and Vatican tower*



5. *U.S. fountains, and sheet-metal fluke*



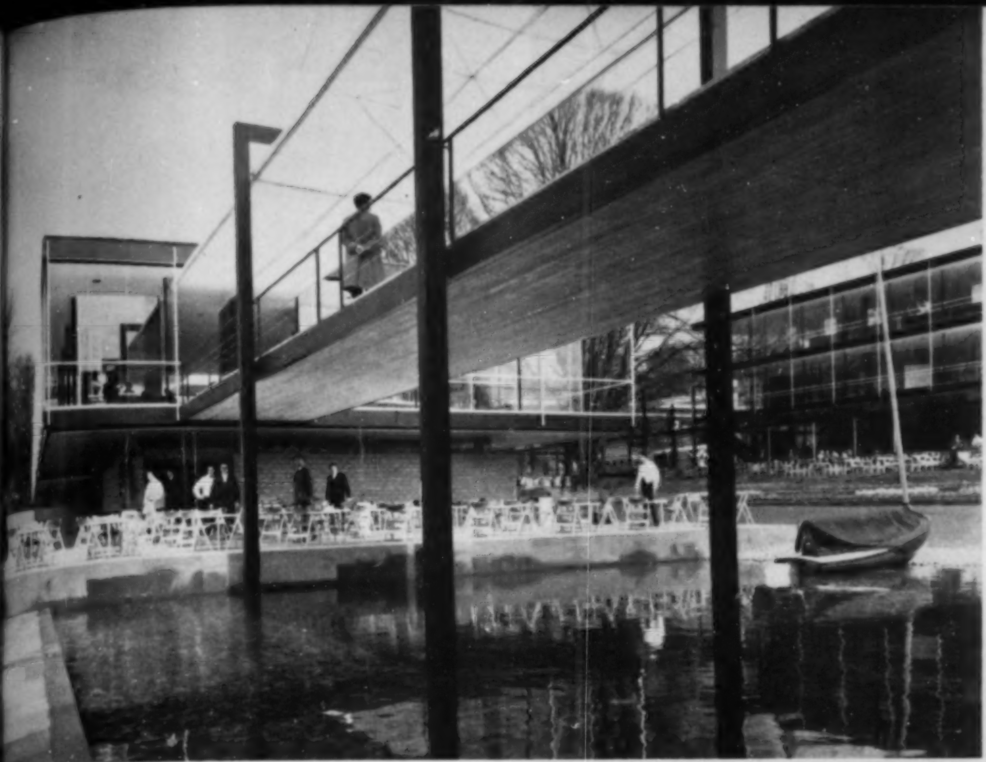
6. *German parasols and matching ottomans*

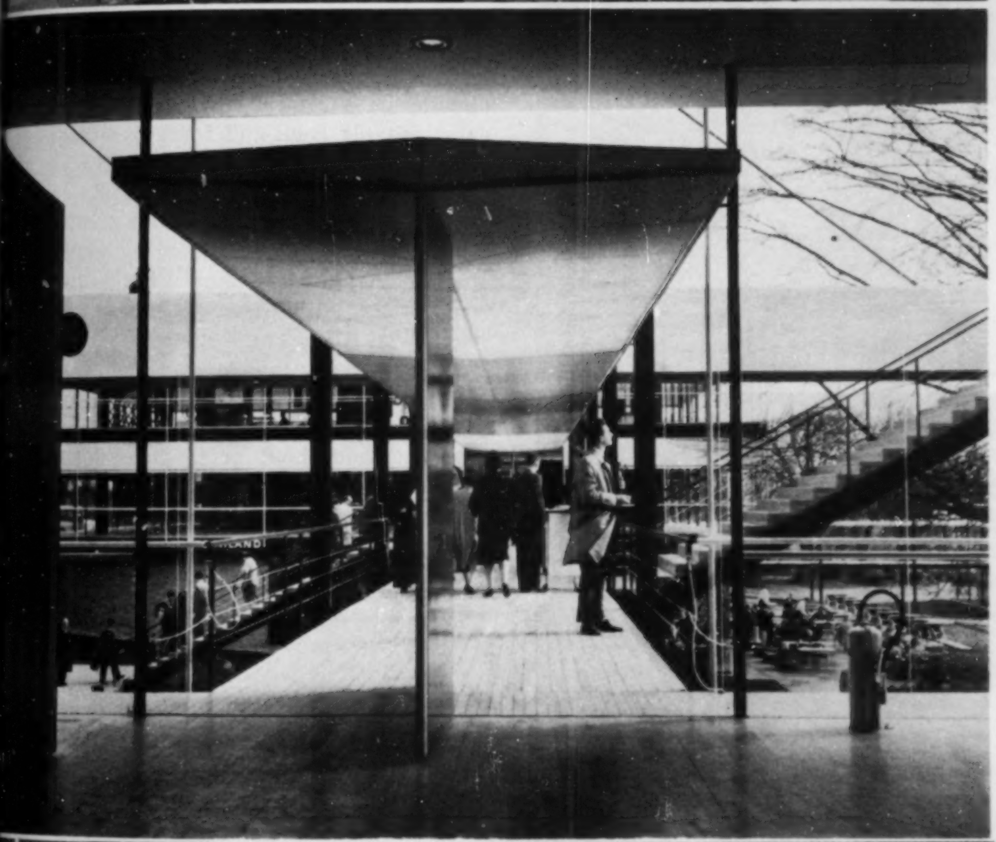


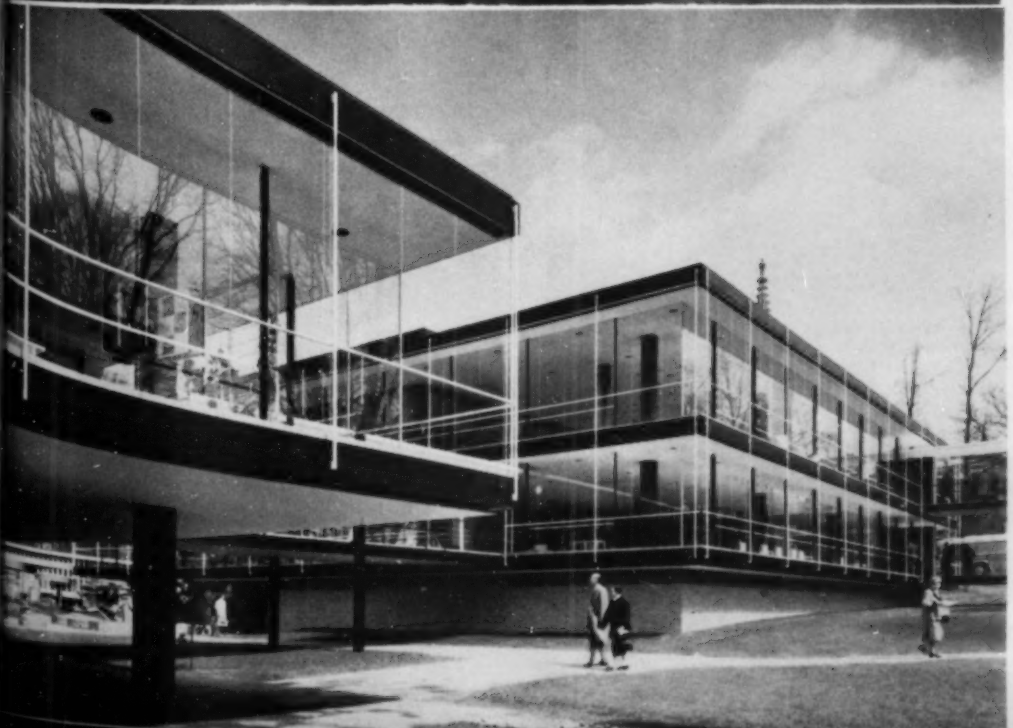
SIDE SHOWS, LARGE AND SMALL

To the visitor, any fair is a series of impressions to be taken home. Brussels yields a more varied harvest than most. There is the Netherlands' bell tower (1), a sturdy structure of white-painted steel pipes with a butterfly canopy, that occasionally plays "My Old Kentucky Home." There is the huge, spiked French pavilion (2), resting most of its weight on one central foundation in an attempt to become airborne. There are the official signposts (3), droopy flower forms in many-colored neon that are neither particularly decorative nor easy to read. There is Thailand's glittering temple, found at the last minute crated away in a Bangkok basement and set up near the Vatican's church (4). There is Alexander Calder's fish-tailed mobile of black sheet metal in the center of the American pool (5), turning slowly as angled jets of water nudge it this way and that. There are West Germany's brown rattan parasols and ottomans (6) that provide resting places for the foot- and eye-weary and a pleasant, offbeat note. Elsewhere, among the fair's collection of buildings that look like fly nets, mousetraps, and Baked Alaskas, the preposterous beak of the Belgian Civil Engineering pavilion (7) stands as the prize-winning curio of them all.

Belgium's own most notable contributions are a new telecommunications building hung from a single steel antenna-mast, and an award-winning transportation pavilion with a wonderful wing-shaped roof that shelters full-size airplanes, trolley cars and automobile displays (see News, page 11).



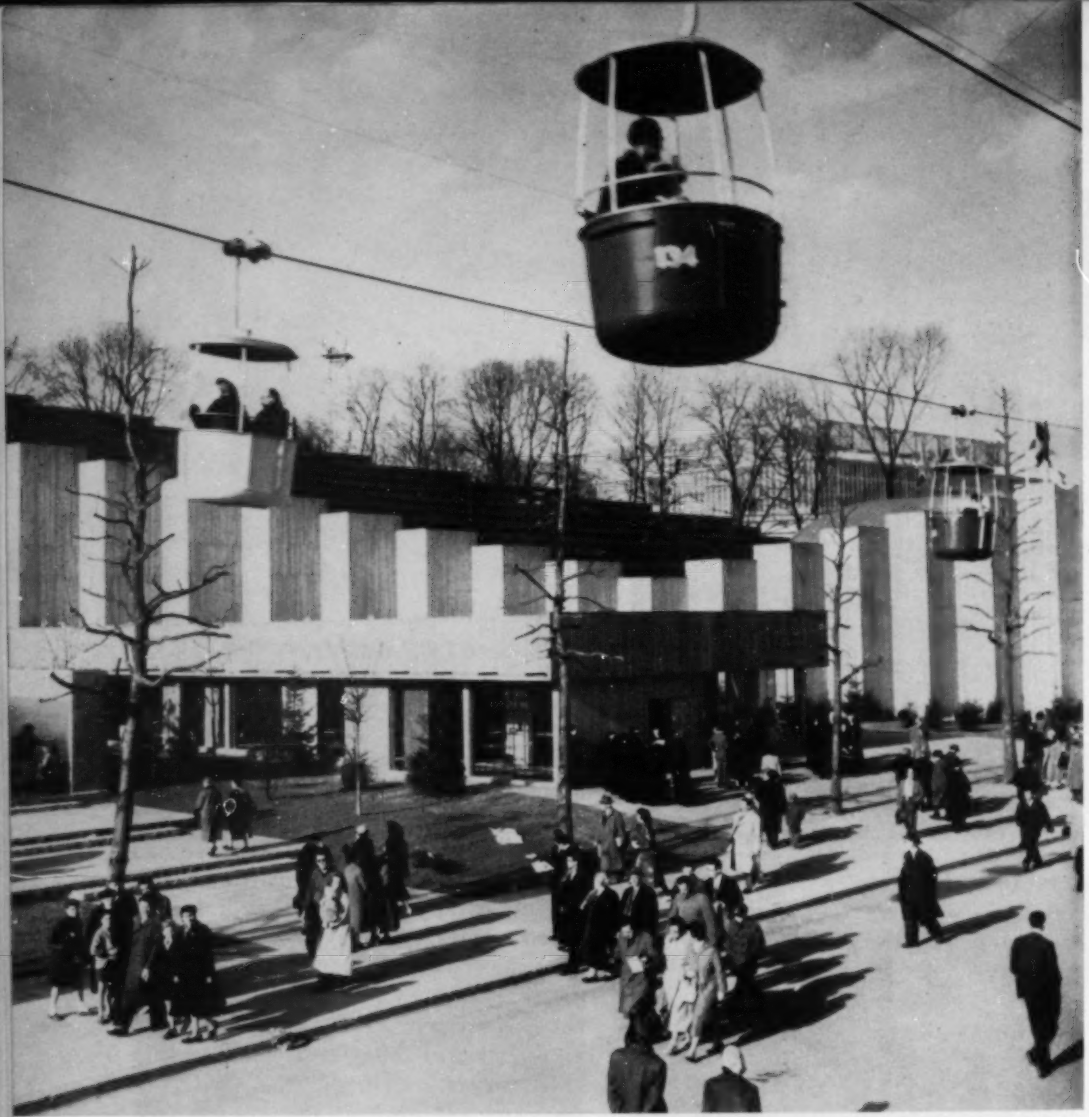


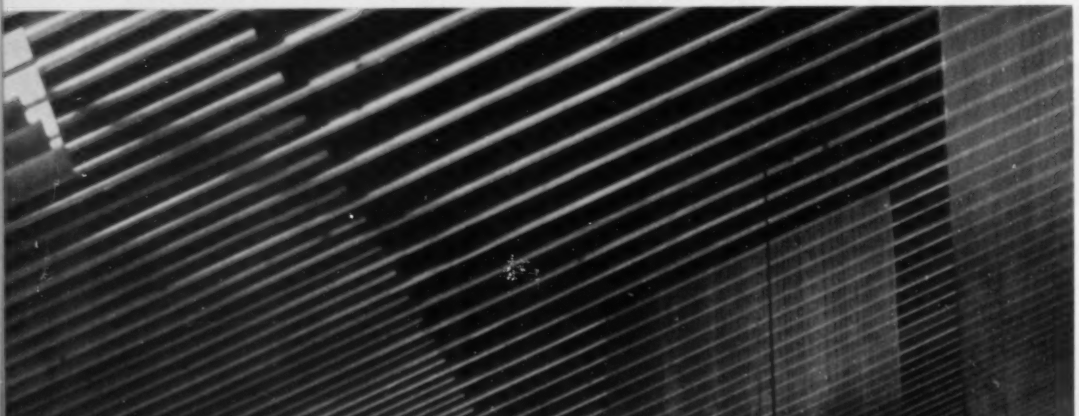


STYLE: WEST GERMANY

Probably the most coolly refined entry at the fair is that of West Germany, whose exhibits are housed in eight, two- and three-story pavilions of welded steel set around a landscaped restaurant garden. Bridges connecting the pavilions are sheltered by canopies of translucent white plastic drawn taut over light, tapered frames. At every entrance, bright blue doors with the same tapered profile are swung open on central pivots during exhibition hours. Raw pine floors add an unexpected Japanese elegance, as do windows set well under the sheltering roof and left open at the top for free passage of air during the summer. The exterior galleries thus formed are neatly set off by white metal stringwork for Venetian blinds, placed outside where they keep out sun heat but not the cooling breeze. Designed by the talented German Architect Egon Eiermann, with Sep Ruf as associate, the pavilion was erected last winter from prefabricated parts, covered over and unveiled well ahead of other frantic last-minute efforts. At fair's end it may be dismantled and taken back to Germany for re-use.

PHOTOS: R. MOOSBRUGGER

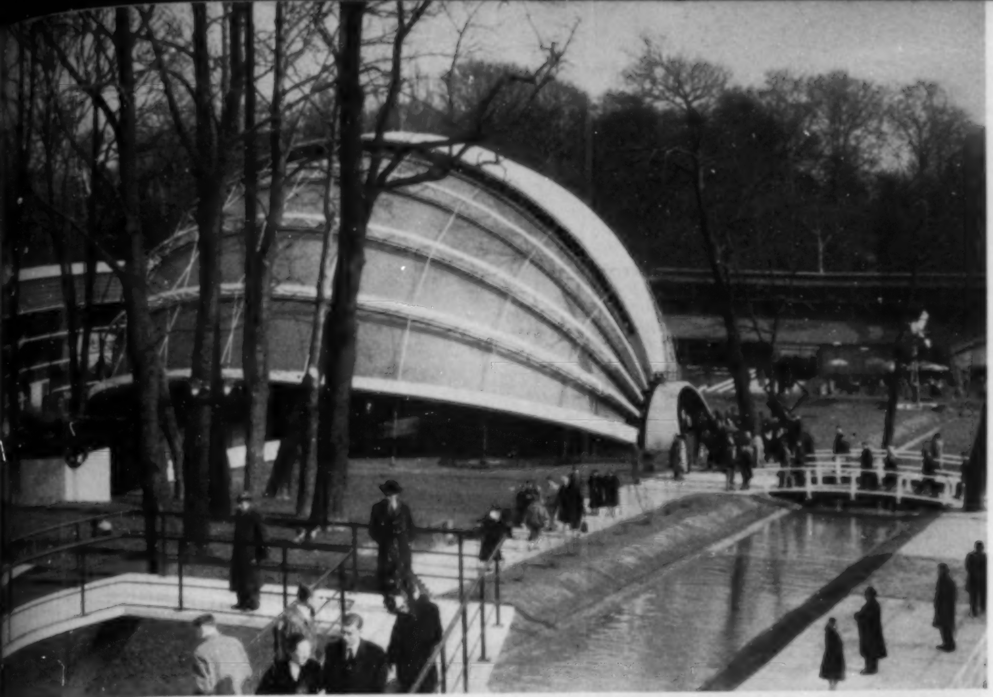


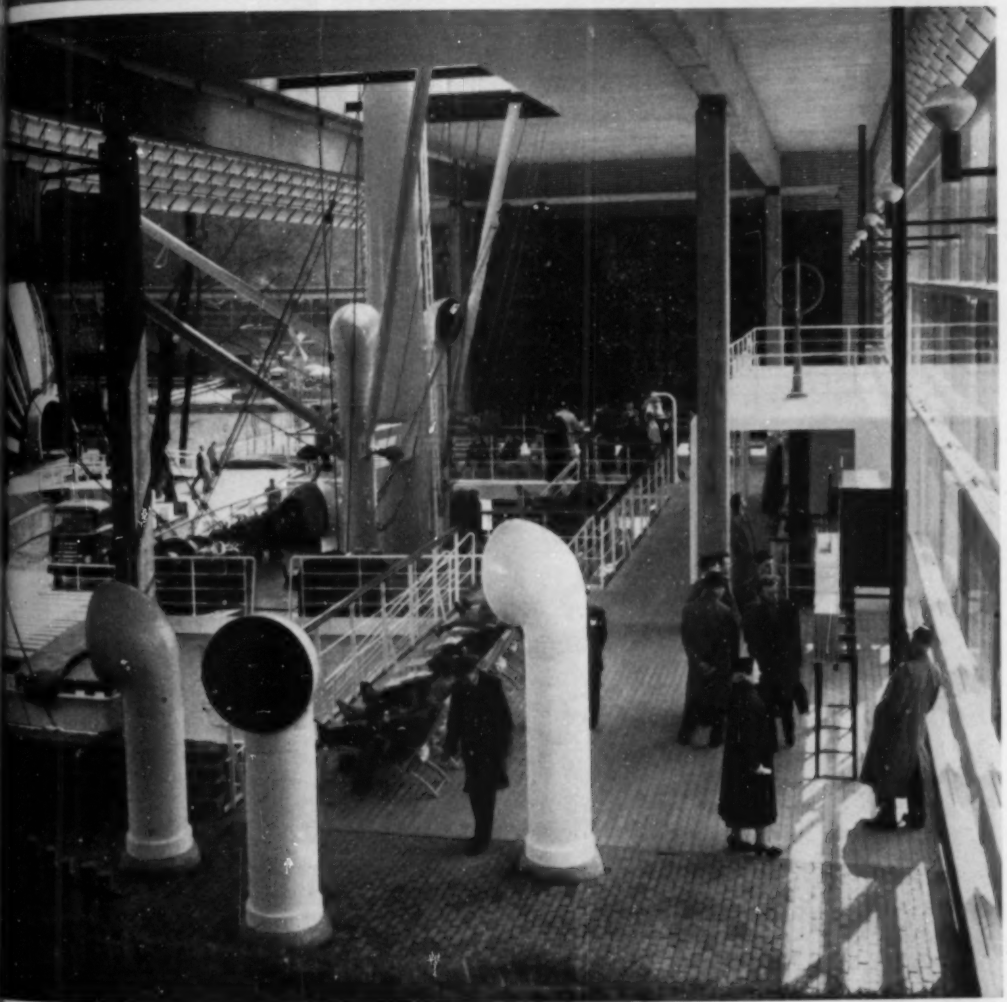


FINLAND: SYMBOLS IN WOOD

Finland's rugged terrain and all-important wood products are dramatized in a pavilion of abstract lumber forms set back from the Avenue of Nations and the gaily colored, Swiss-made cable cars that ply back and forth overhead. Each rising plane, textured with close-spaced wooden slats, yields a strip of clerestory window for light and ventilation. The building, designed by young Finnish Architect Reima Pietila, has well-crafted, subtly lighted interiors by Tapio Wirkkala. These include exhibits of woodworking and paper factories, outdoor life and sports, and a special section for Finland's excellent decorative and household arts. Behind the pavilion can be seen the glass walls and roof structure of the Russian hall.

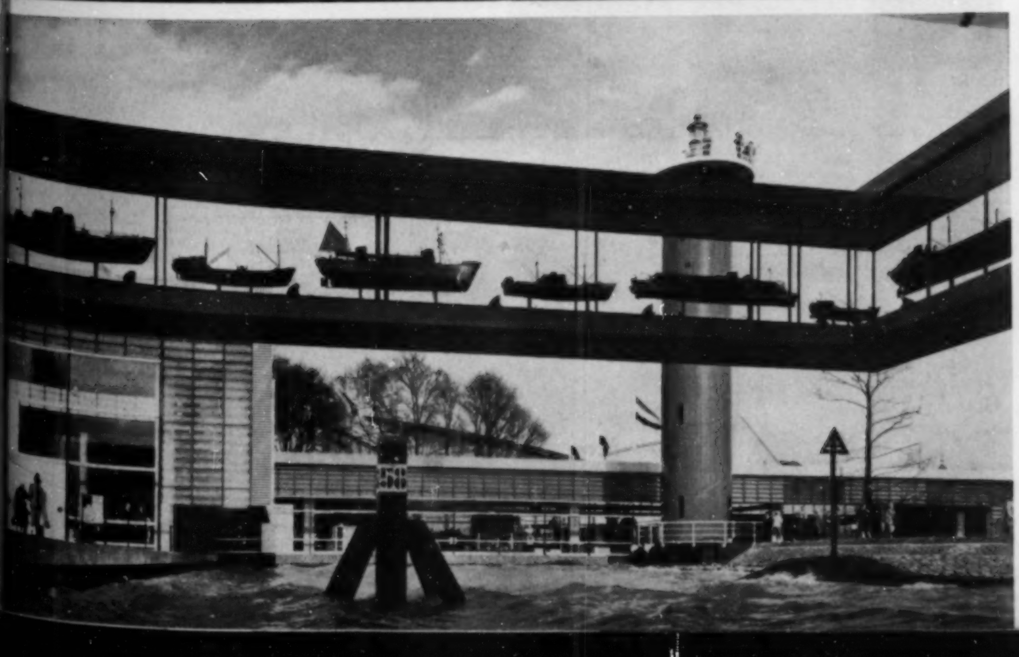
PHOTOS: B. MOOSBRUGGE

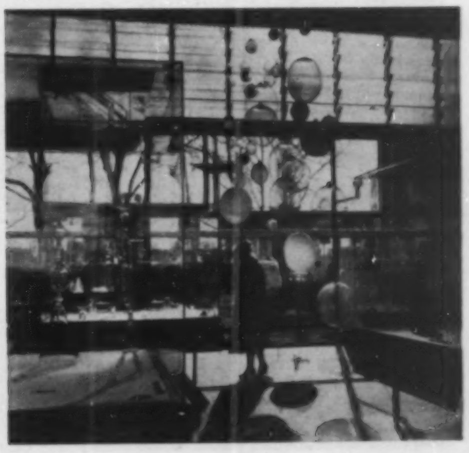


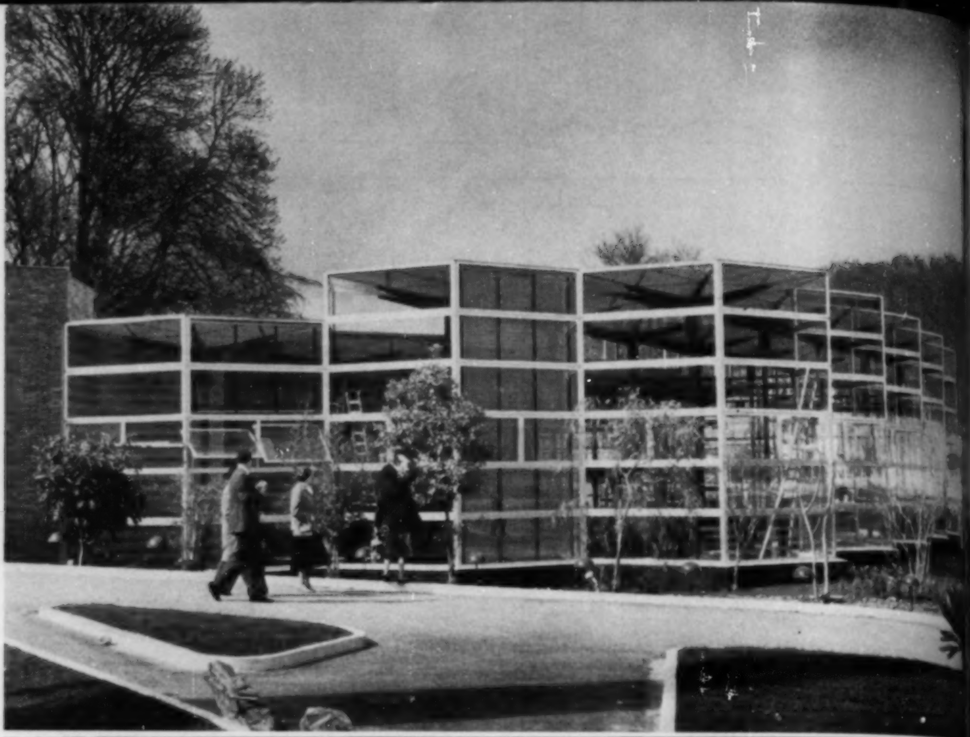


HOLLAND: SYMBOLS IN WATER

Instead of putting the many Netherlands exhibits in one huge hall, Architects Boks, Van den Broek, Bakema and Rietveld built several precast concrete exhibit structures opening toward a lively outdoor exhibit of man and the sea. The lower part of the sloping site represents the lowlands, landscaped with canals. Under the spidery blue dome of the hydraulic engineering exhibit, a wave machine and small scale models explain the reclamation of new land. In one pavilion, visitors can inspect Holland-America Line cabins and sit in deck chairs above a full-size freighter hold. At the upper level, another wave paddle sends the "sea" swishing endlessly against a dike.

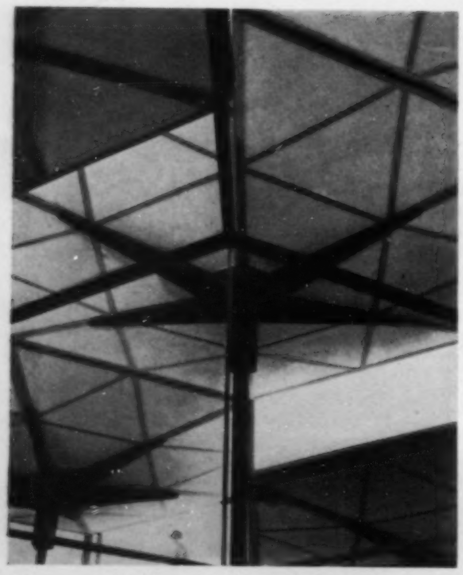


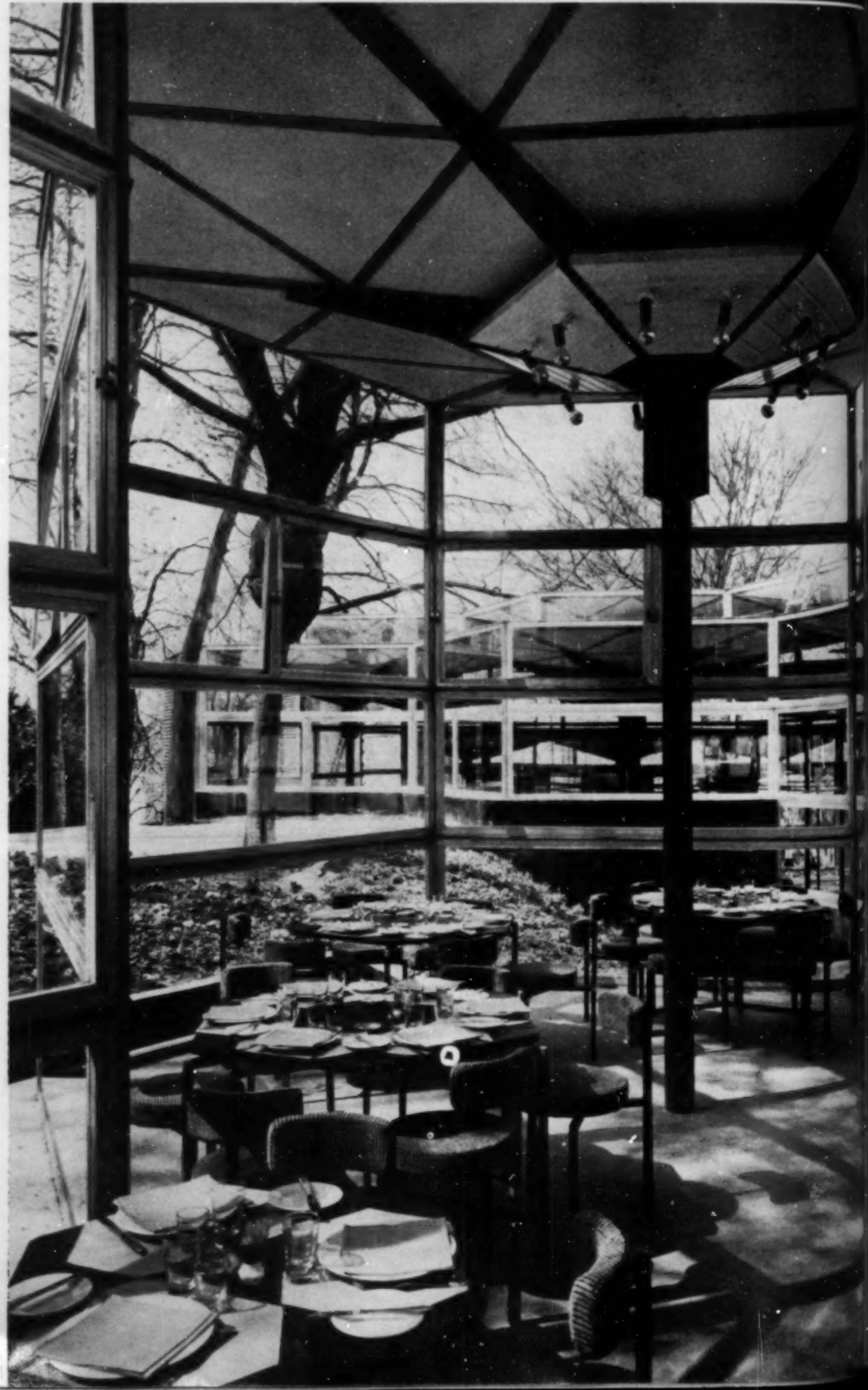




SPAIN: EXERCISE IN PURE SHAPE

Unlike the symbolic displays of Finland, the Netherlands and others, Spain is represented at the fair by an advanced exercise in pure form. Following the contours of a hilly site and carefully avoiding mature trees, Architects Ramon Molezun and José Antonio Corrales set up an irregular honeycomb of cellular units: high and low hexagonal roof parasols of acoustical board on steel latticework, supported by steel drainpipe columns. The hexagons of the floor plan echo the roof exactly, rising and falling in many levels for exhibits, restaurant and bar, and a raised platform for folk dances. The pattern even extends to dining tables, display cases, and floor tile, in a remarkably unified design lightly enclosed in glass. Prefabricated, it may be re-erected as a park pavilion in Madrid.

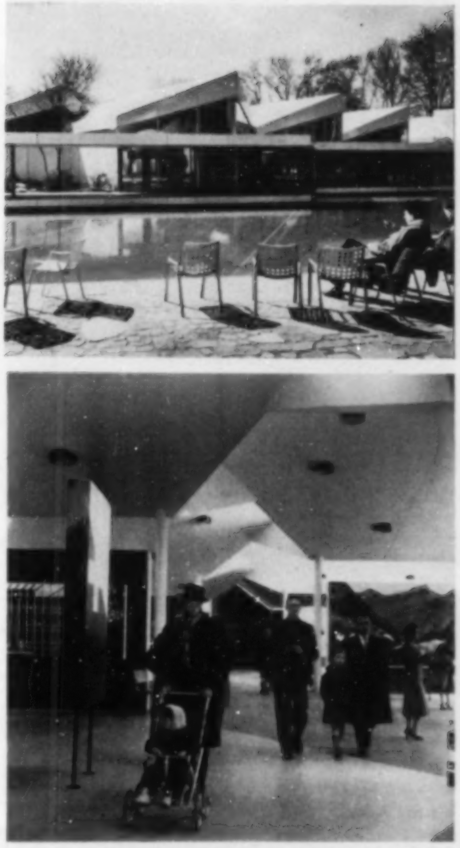




HIGHLY EXERCISED SHAPES

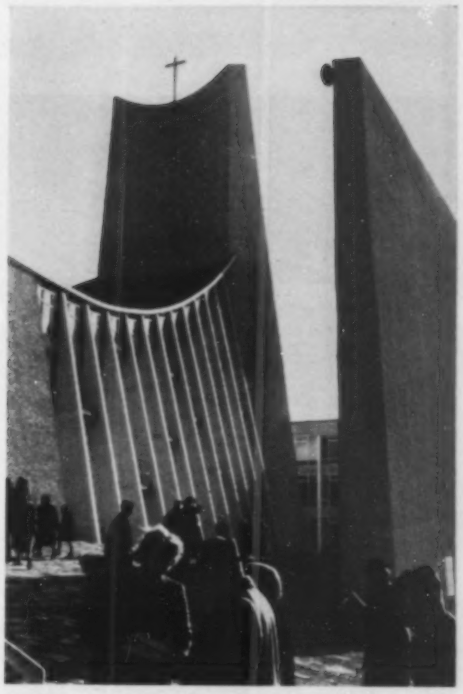
Directly across from the Spanish building, two other pavilions also reveal a crystalline approach to form. The Swiss exhibit by Architect Werner Gantenbein is again a honeycomb plan, but of 32 larger hexagons arranged like a mountain village around a little lake (1). The peak-roofed huts, made up of large prefabricated panels with aluminized exteriors, lead the visitor through a logically unfolding display of Swiss life and work. Next door, the United Kingdom's Crystalline Hall of Tradition (2) presents even spikier repeated forms: three 70-foot pyramids made of self-supporting triangular panels of stressed-skin plywood, bolted together. A smaller "bishops hat" out front shelters the gatekeeper, and a reclining figure by Henry Moore contemplates a toothy wall to one side. Architects were Howard Lobb and John Ratcliff; the structural engineer, Felix Samuely.

The real highjinks, however, belong to the strut-and-cable school of design, amply represented at the fair. Among the clearer examples is the Brazilian building by Sergio Bernardes, a great tarpaulin of precast roofing on cables strung from four corner supports (3). Then, there is the swooping, wooden-buttressed roof of the Vatican's 2,500-seat church, partially hidden behind the high wall of its own little "city" (4). Least inhibited of all is Le Corbusier's little collapsing tent designed for the Philips Co. of the Netherlands (5), a prestressed shell of dissimilar hyperbolic paraboloids that houses an 8-minute electronic "séance" in space, sound, light, and color.

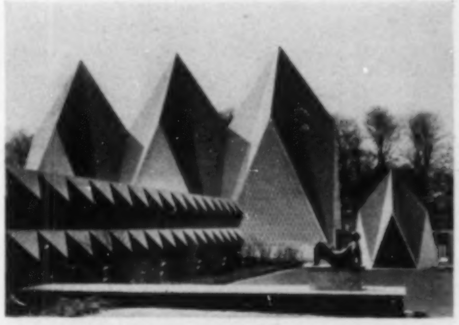


1. Switzerland: hexagons around a lake; (top) house exhibits of Swiss life

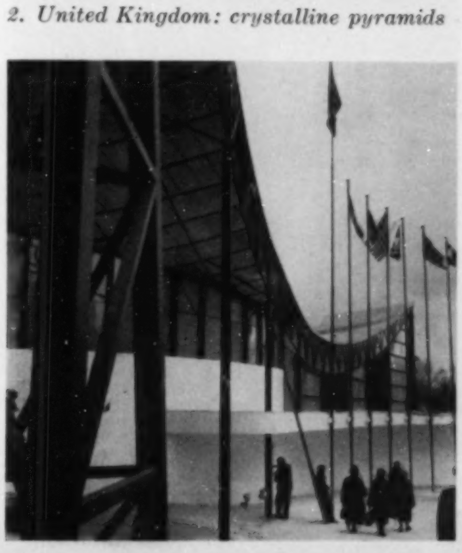
PHOTOS: B. MOOSBRUGGER



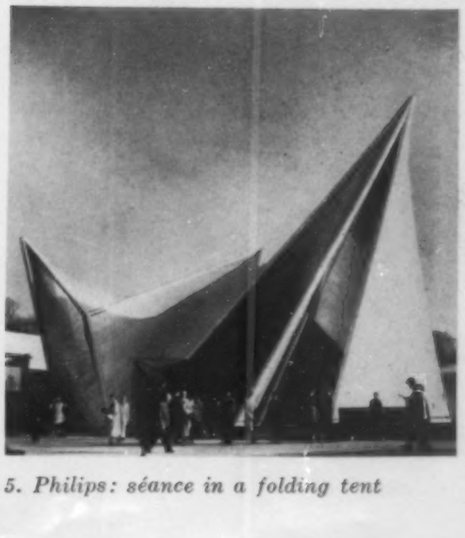
4. Vatican: a swoop, a tower, and a wall



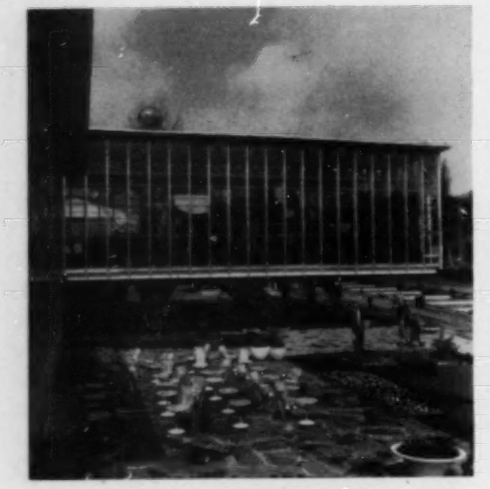
2. United Kingdom: crystalline pyramids



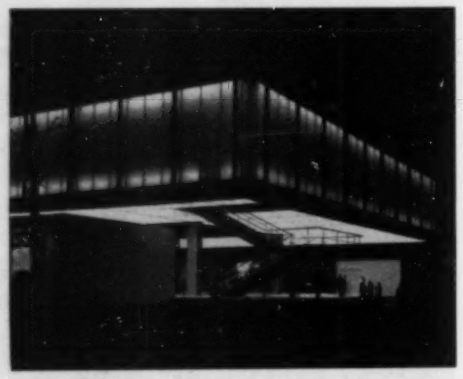
3. Brazil: tarpaulin on tripods



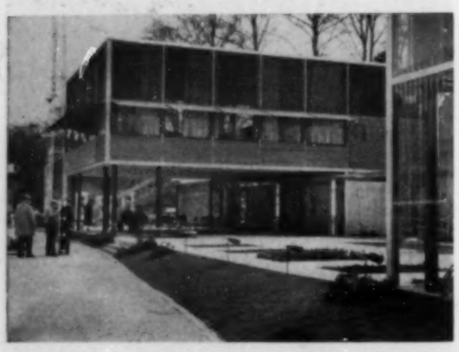
5. Philips: séance in a folding tent



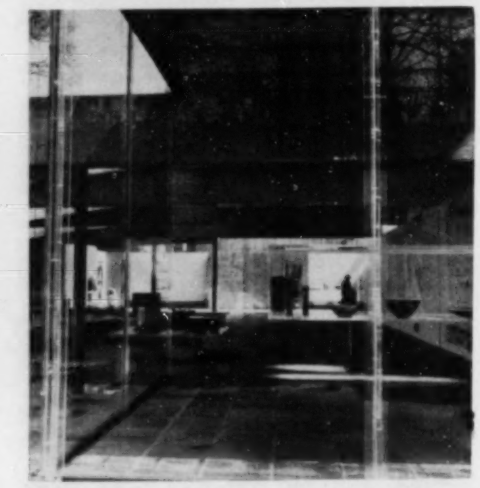
1. Luxembourg's showcase, on steel legs



2. Austria's pavilion, a court of light

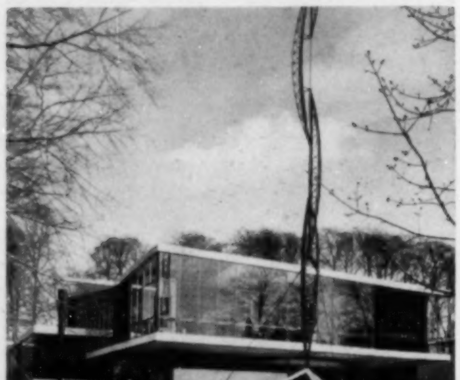


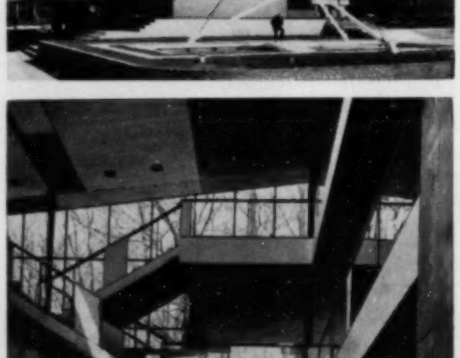
3. Turkey's tailored boxes, on stilts



4. Norway: laminated beams, sparse exhibits, and plastic walls

5. Yugoslavia: a welded wire pylon, many levels, and sleek displays





SMALLER GEMS

Aware of the cost of outperforming larger neighbors, some of the small nations concentrated on simple, handsome refinements of the International Style. Luxembourg emphasizes her economy with well-planted legs of steel visible through a glass showcase of iron-mining exhibits (1). Austria's pavilion rises above an open court brilliantly lighted at night (2). Turkey presents two well-finished boxes on stilts (3), and Norway's sparse exhibits are enclosed in long spans of timber and clear plastic walls (4). The Yugoslav pavilion (5) is invitingly open, full of ascending volumes and displays.

SPECTACLE: THE U.S. PAVILION

Carefully set back at the summit of the Avenue of Nations and brilliantly heralded by flags, fountains, and apple blossoms, Architect Edward Stone's magnificent drum is in a unique position to steal the show. Inside its big merry-go-round of latticed plastic, fairgoers are treated to an airy arena of light, water, and royal willow trees. Gold mesh trappings draped from the lower cables of a plastic-covered "bicycle-wheel" roof lead to an open tension ring 60 feet across, a wide gold bracelet that glitters at night with a diamond studding of lights.

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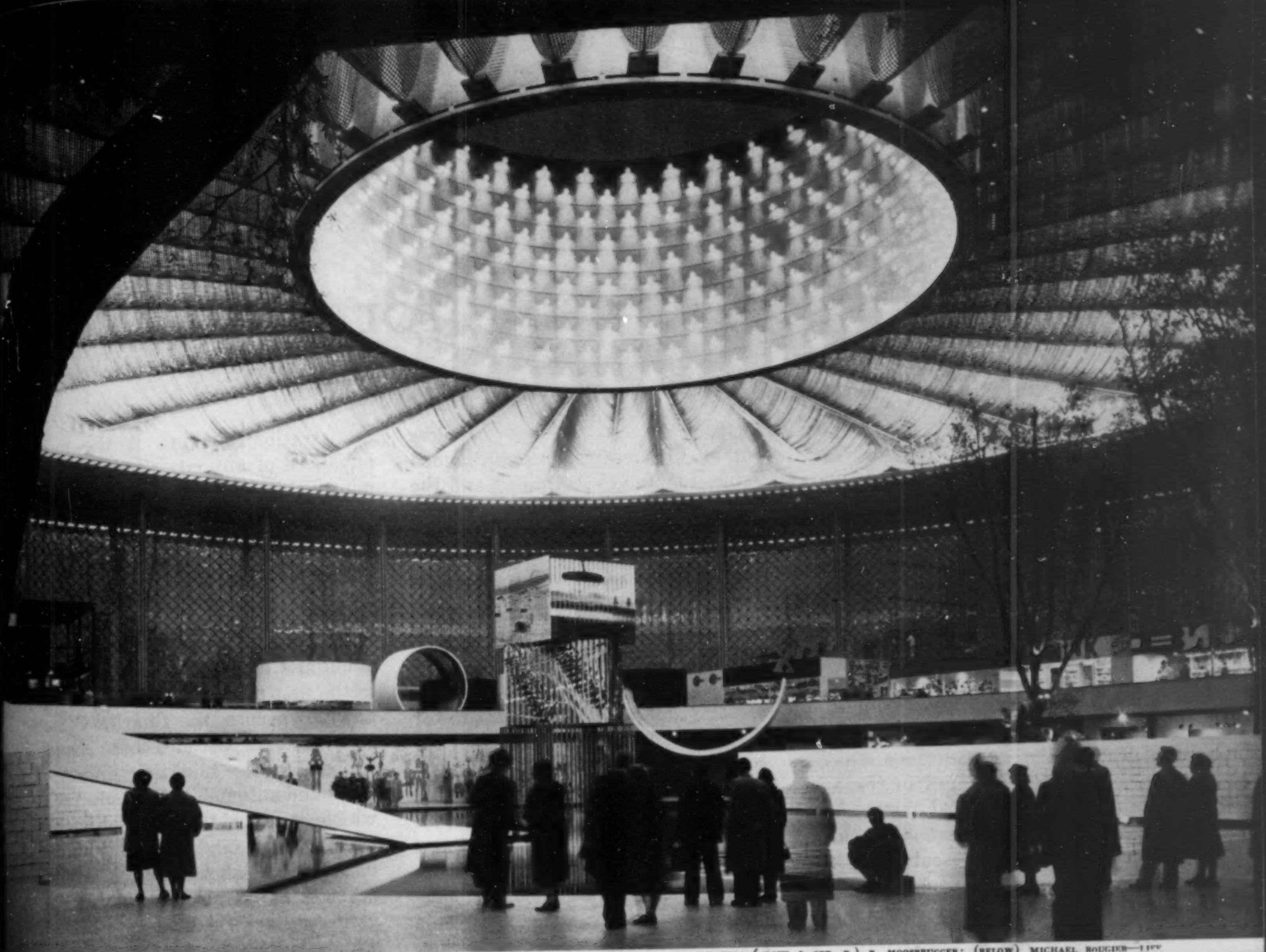
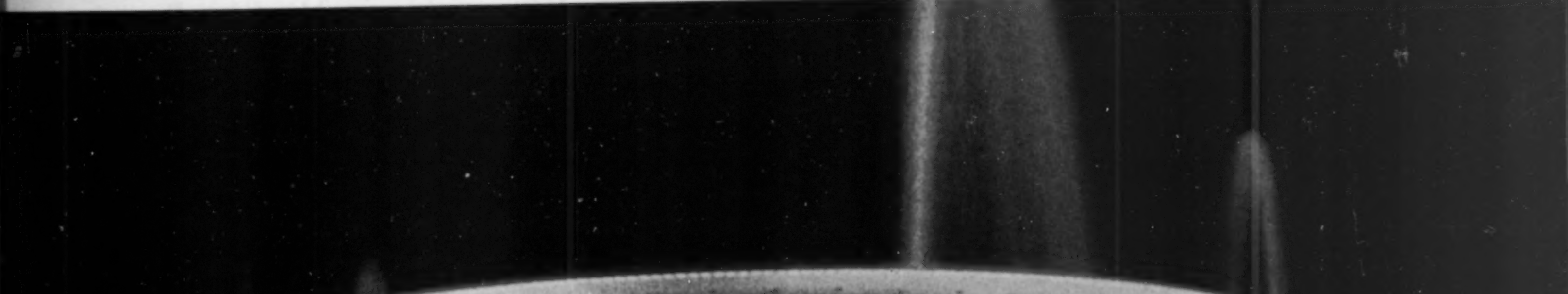


PHOTOS: (ABOVE & OPP. P.) B. MOOSBRUGGER; (BELOW) MICHAEL ROUGIER—LIFE



Baltimore has worked out a new approach to city rebuilding.
Its brightest feature: no federal subsidy.

New heart for Baltimore

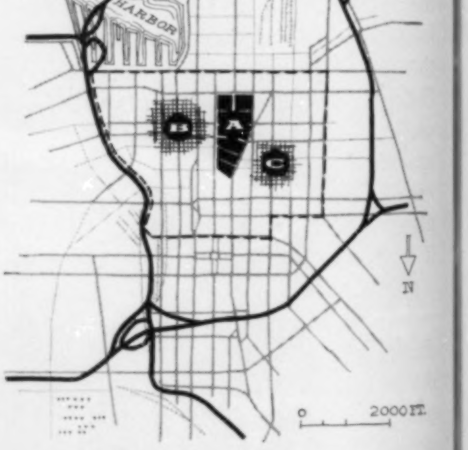
An unusual team of public and private planners in Baltimore, Maryland has come up with a private enterprise approach to urban renewal that could alter the methods and meaning of much city redevelopment. The city's proposed Charles Center scheme—a 22-acre, $127 million project planned for a deteriorated area at the core of Baltimore's downtown—will not use a nickel of federal subsidy. Far from suffering from this arrangement, Baltimore expects that its investment will be fully repaid, and a net increase in tax revenues realized, only nine years after the Center is built. Moreover, if the present plans for the Center are followed, Baltimore ought to have an extraordinarily attractive downtown.

The basic reason that Baltimore can afford to drop the federal subsidy in this case (and incidentally save as much as two years of negotiations) is that the plan also drops the artificiality of most redevelopment: it does not attempt to stimulate a rebuilding use which is at fundamental odds with previous use or the surroundings of the project. The site is in the very heart of downtown, not on its fringes, and it is to be re-used for precisely the things that belong in the heart of downtown—offices, entertainment facilities, a hotel, stores, a transportation terminal. Because the location and the re-use are so economically well suited to each other, the land is expected to be marketable without any write-down subsidy to cover the difference between the purchase price and the re-use value of the land (which is where federal redevelopment funds go). Although the redevelopers who bid successfully for Charles Center's ten building sites will not get bargain write-downs on their land, they will nevertheless get a publicly sponsored added value. For the over-all plan and the treatment of public spaces will add immensely to the value of their investments. Baltimore, for its part, will receive a tremendous lift where it is most needed, right between its main shopping district and its financial district (see map).

The point is that redevelopment powers are used here to plan for normal, matter-of-fact building, for construction which would be undertaken somewhere in the city in any case. The difference is that without the Charles Center plan this new building would be scattered and its effects dissipated, so far as regenerating the city is concerned. This plan is an approach to redevelopment that might well be used in other downtowns, and also could be adapted to residential redevelopment plans.

The Charles Center scheme is not a sudden, brilliant brain storm which happened unaccountably to strike in Baltimore. It is one result of a complete public and private overhaul of redevelopment, which in turn occurred as a result of the trial-and-error experience which Baltimore has had with nearly every variety of renewal since 1944. The plan itself is the work of The Planning Council, an independent and unique planning agency, which is sponsored by one group of Baltimore's businessmen and has been commissioned by another group of businessmen to do a comprehensive downtown study (which includes this plan). The Planning Council and its businessmen sponsors and clients have worked intimately with the city government, which 18 months ago completely reorganized its own redevelopment legislation and administration, making it the most advanced of any city's today. Without all this spade work, there would not have been a Charles Center plan, and no hope of a Charles Center reality.

Nor would Charles Center be possible if the city were not dealing with the main reason that brought about the deterioration of this site in the first place. Like many another downtown core, the Charles Center area has for decades been handicapped by the blighting effects of truck and automobile through-traffic, which struggled through Baltimore's downtown merely because it was an unavoidable bottleneck between other traffic points. Baltimore's new ring road system (see map below), which is now under construction, makes possible at last the reclama-



Map shows Charles Center as a wedge-shaped area (A) between the downtown financial district (B) and main shopping district (C). Part of the ring road (black lines) for through-traffic is under construction. The broken line bounds the central business district.

BY JANE JACOBS

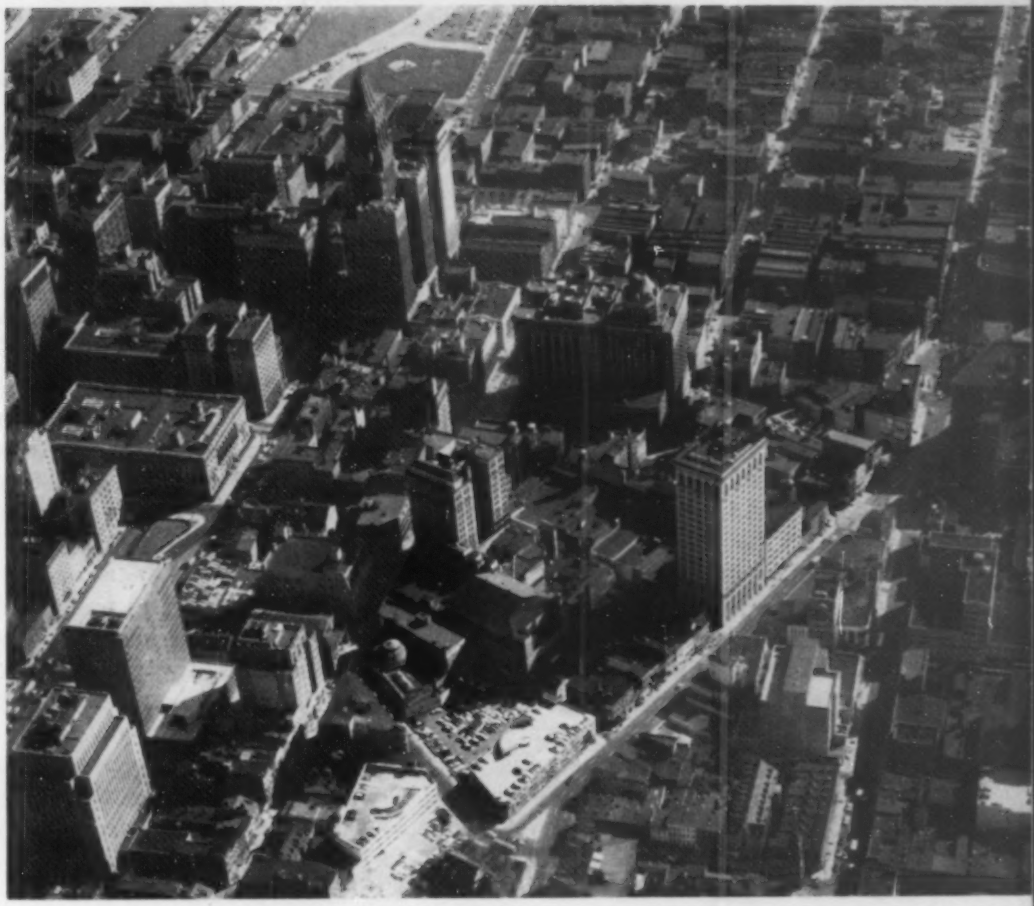
tion of the traffic-blighted core. The Patapsco cross-harbor tunnel by-pass, alone (not shown), southeast of the inner ring, has reduced through-traffic downtown by 30 per cent since it was opened in 1957.

Public parks, private plots

The design of Charles Center is based on common sense just as direct—and just as uncommon—as was the choice of the right site at the right time. Here are some of its important design features:

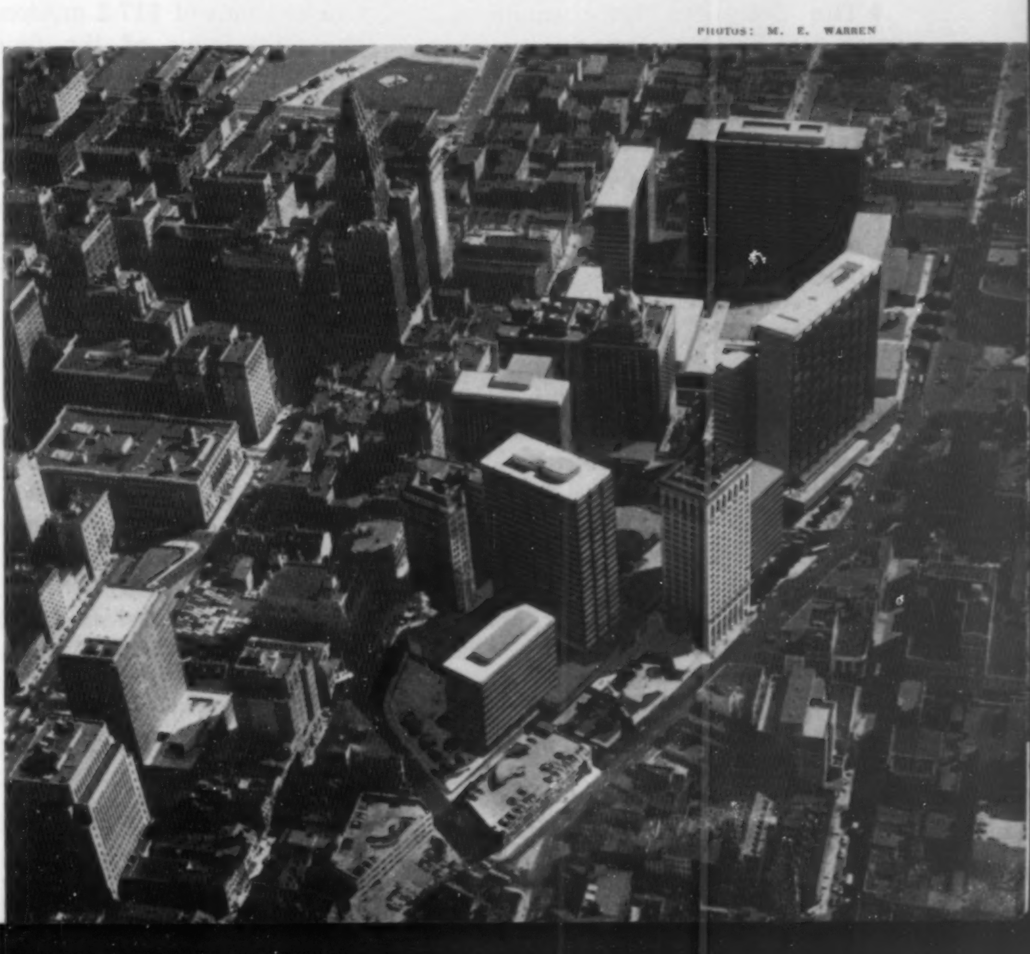
▸The plan includes three public parks to be constructed and owned by the city, and also anticipates public ownership of the major pedestrian streets and pathways. This means the Center is freed of the necessity of finding a developer large enough to take on buildings enough, with design repetitive enough so that he can afford to throw in the open spaces too—and incidentally pay himself for all the long-drawn-out negotiations that this kind of deal entails. The Charles Center plan designates ten separate plots for sale. Since the public spaces and the sizes of these separate plots are fixed facts, the basic plan can be closely adhered to even if it changes in detail.

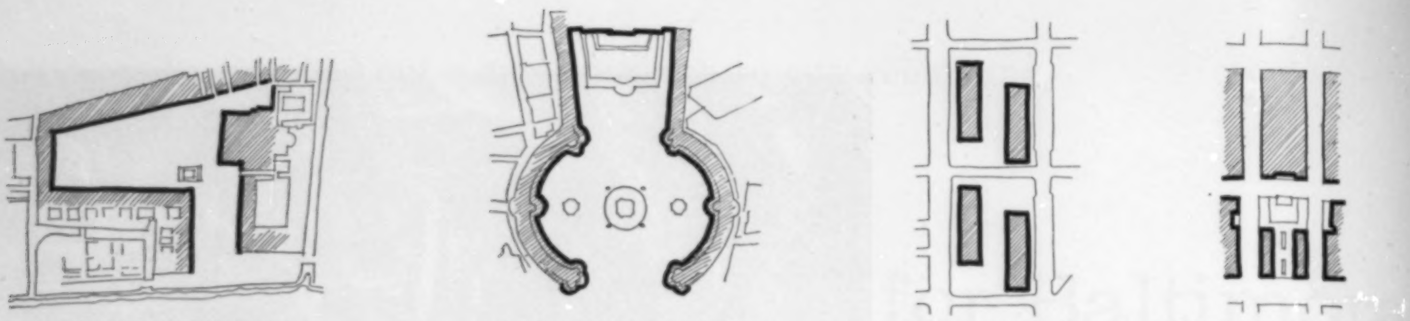
▸The design blends the Center into the area that lies outside it. This means the Center will be less a "project" than an integral, continuous part of downtown. On its periphery, sites for retail space, office buildings, and park are all placed so as to give continuity and support to good areas across the Center's borders. Sites for the larger buildings are placed so as to continue the skyline of the adjoining financial district's large buildings. The smaller buildings, too, are to be scaled to existing buildings, on and off the site. Even



Charles Center's site as it is today is shown above. It includes five buildings to be retained in the completed project, shown in the model photo below. Redevelopment of the harbor shore (top of photos) was planned a few years ago, but a comprehensive downtown study indicated the more central site as more urgent. The financial district is to the left of Charles Center. For a view of this area before an earlier try at planned renewal 50 years ago, see page 92.

PHOTOS: M. E. WARREN





PIAZZA SAN MARCO PIAZZA SAN PIETRO PENN CENTER ROCKEFELLER CENTER

Comparison of famous open spaces shows that in scale and tradition Charles Center is closer to Venice than to Philadelphia or New York.

the spaces between the building locations are so arranged as to stress downtown continuity. They are disposed to catch views of Baltimore landmarks (see rendering, page 91). A 68-foot drop in topography is exploited both for continuity with the rest of the city and for its drama.

▸ The design adapts the pedestrian island principle to a concentrated downtown area. Pedestrians are to have a complete street system of their own, yet cars will be able to get through from one side of the island to the other. The sloping site was used to get two separate "street levels" at certain strategic points, with the cars passing under the pedestrians. People and stores are all above ground, and the stored cars (except for one garage now existing) are underground. This arrangement makes possible, over the entire site, truly urban, concentrated, lively design.

▸ The designers have made a great deal of their opportunity for undiluted urbanity. The open spaces, and the paths that join them, are not simply places left without building. They are architecturally designed and architecturally organized spaces, as much so as any building. And as a whole, the design of the Center is concentrated, intricate, lively and full of changes. It is a celebration of city core qualities.

The existing buildings which will remain on the Charles Center site are a large hotel, a recently built 490-car garage, and three substantial office buildings. To these will be added 2 million more square feet of office space in eight towers, 428,000 square feet of retail space mostly in low buildings, another hotel, a transportation terminal, a TV studio and theater, and underground parking for 4,000 cars. The additions represent a conservative reckoning of normal office and entertainment expansion which would occur somewhere in Baltimore in the next 10 or 15 years in any event. The retail space is substantially less than already exists on the site. The new hotel, too, appears to be a sure thing because the Hilton chain, among others, has been busying itself to find a downtown site and Baltimore is now the most underserviced large city in the country, so far as hotel space is concerned.

The land is expected to cost the city about $24 million, and with the public spaces subtracted, is expected to bring from developers $17.2 million. The net land cost to the city will be the $6.8 million it pays for the parks. To this will be added the cost of development of the parks and of streets and utilities, plus construction of the $4.7 million transportation terminal, for a total city investment of $17.2 million.

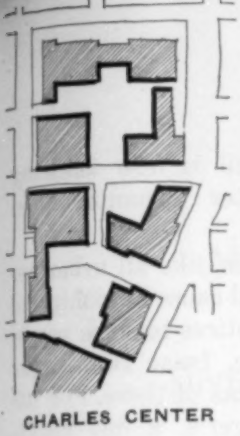
The total value of the finished project will be about $127 million. This will bring the city a net increase in tax revenues of $2 million a year over the $531,000 tax derived from this area now, which should permit the city to recoup its entire investment in nine years, and thereafter make a tax "profit."

Pioneering partnership

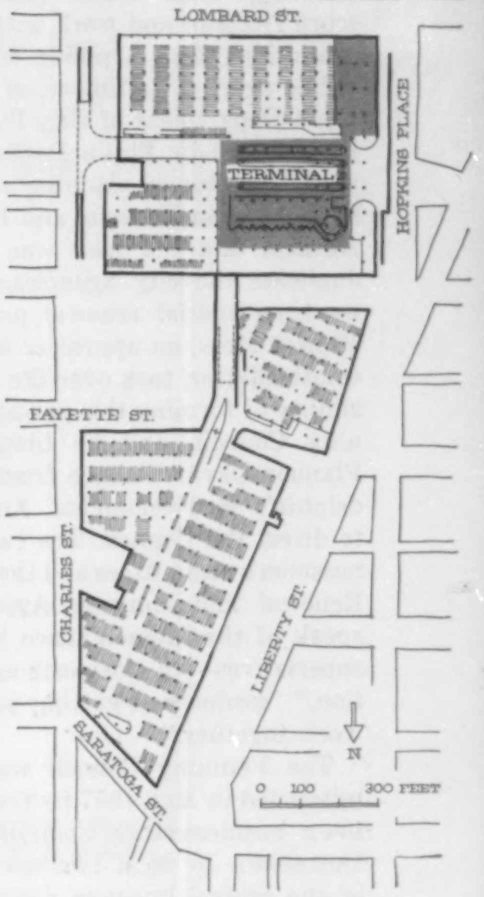
All this stands a good chance of actually happening, because back in 1955 Baltimore faced up to the fact that renewal was bogged down in the overlapping authorities and red tape that most cities are still putting up with, and proliferating. Oliver C. Winston, who headed the generally admired Baltimore Housing Authority, was appointed by Mayor Thomas D'Alesandro Jr. as interim renewal coordinator, and given authority to study what kind of renewal program and administration Baltimore should have. A board of consultants, headed by Professor William L. C. Wheaton of the University of Pennsylvania's Institute for Urban Studies, drew up a comprehensive 20-year program and recommended a single Renewal and Housing Agency, not an extra-governmental authority, but an agency responsible to the electorate through the mayor. This report went to D'Alesandro in September 1956. Instead of appointing a committee to study the study (as many mayors have done), D'Alesandro swiftly adopted the recommendations, with the comment that it was the mayor's function to lead, not wait to be pushed. By January 1957 all the necessary legislation had been passed and the new agency set up with Walter Sondheim Jr., a department store executive and president of the School Board, as chairman, and Winston as director. Among other unprecedented steps, the entire downtown district of Baltimore was designated a renewal area.

Meantime, a group of Baltimore businessmen formed the Greater Baltimore Committee, now headed by Charles Buck, president of the Maryland Title Guarantee Company. And a group of downtown retailers—later expanded to include other businessmen with downtown interests—formed the Committee for Downtown, led by J. Jefferson Miller, a department store executive.

The Greater Baltimore Committee is in the tradition begun by the Allegheny Conference of Pittsburgh, of businessmen's public service redevelopment groups. But the Baltimore committee took an unusual step, and as it has turned out, an


CHARLES CENTER

PLANNING COUNCIL OF THE GREATER BALTIMORE COMMITTEE, INC.: DIRECTOR: *David Wallace.* **PROJECT DIRECTOR:** *George Kostritsky.* **ECONOMIST:** *Harry Cooper.* **ARCHITECTURAL CONSULTANTS:** *Rogers, Taliaferro & Lamb.*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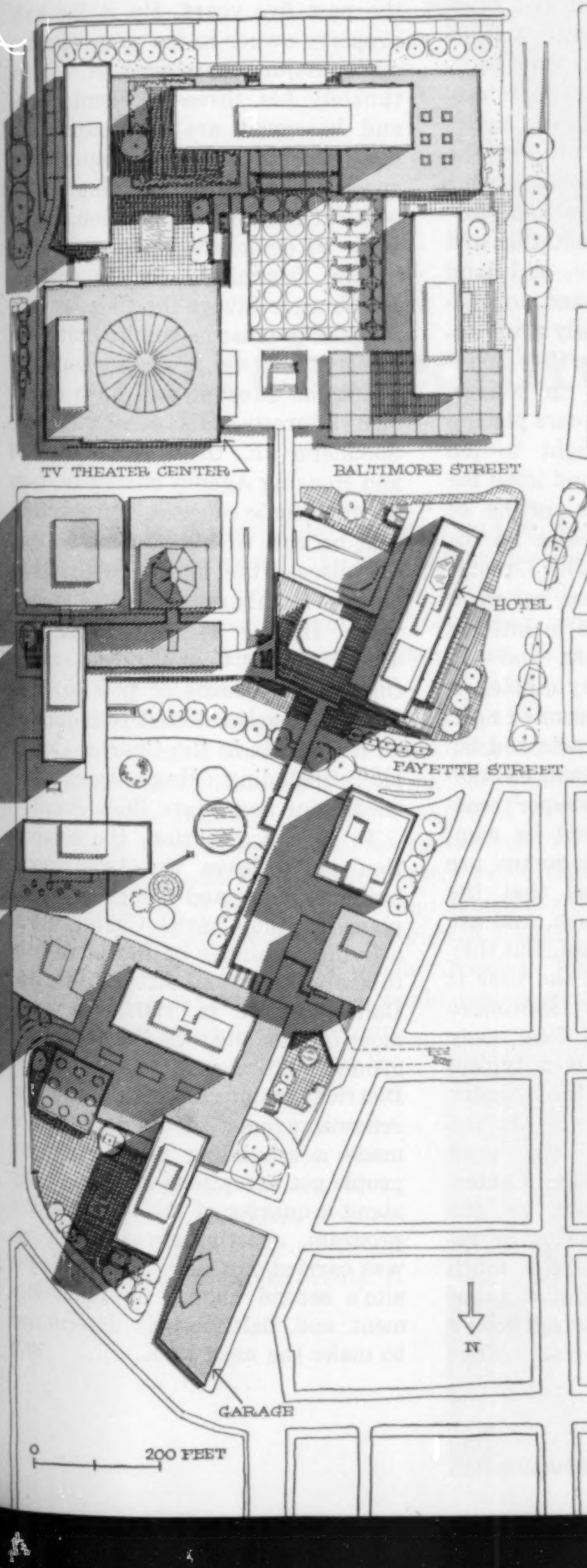
Design of Charles Center is organized around three city parks (large site plan, left): a small one at the northern tip, a major central park, and a plaza over the underground transportation terminal at the south end (top of plan). Buildings not labeled are existing and proposed office buildings. The rendering below shows the major park from a pedestrian gallery along Fayette Street. The intricate scheme, using a slope of 68 feet from north to south, has six different levels, with underground parking in portions of five of them. The small plan (right) shows the next-to-bottom level, all below ground and devoted largely to parking.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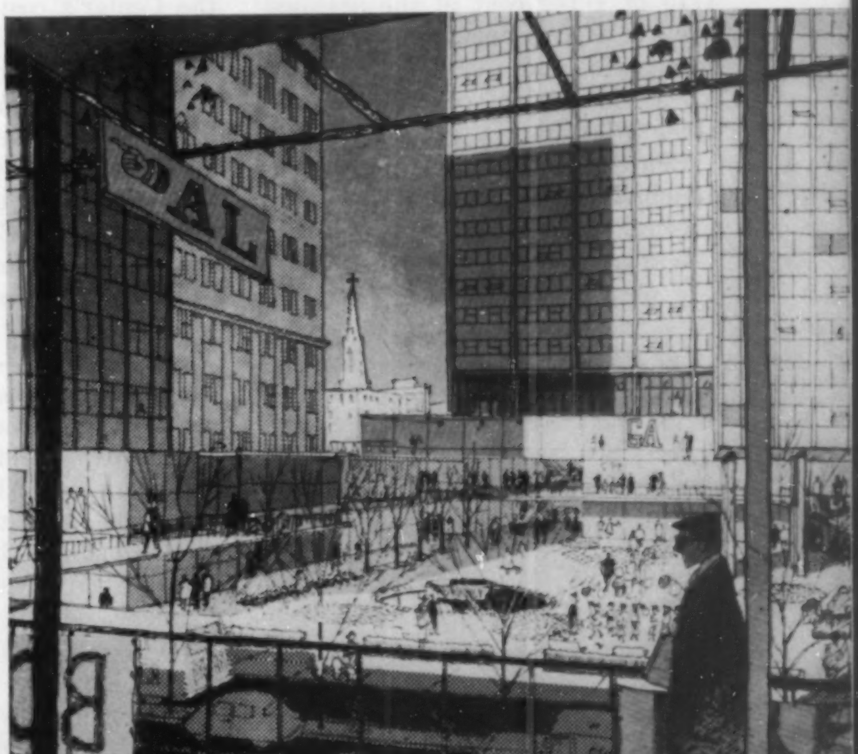


inspired one. It set up a private planning body, which could have more freedom and work with fewer inhibitions than a public or quasi-public agency. Baltimore, of course, has a Department of City Planning, now headed by Philip Darling, formerly director of planning at Baltimore's Urban Renewal and Housing Agency, and the idea was not to duplicate the city agencies, but to work on special renewal problems. Hunter Moss, an appraiser and real estate adviser, took over the responsibility of forming this private Planning Council, and he brought in Planner David Wallace from Philadelphia's Redevelopment Authority to direct the Council. The two businessmen's committees and the Urban Renewal and Housing Agency all speak of the Moss-Wallace team in superlatives—"a storybook aggregation," "geniuses at getting people to work together."

The Planning Council was commissioned in May 1957 by the downtown businessmen's Committee for Downtown to do a two-year study of the central business district and propose a plan. To finance this work, the Committee for Downtown raised $150,000 by assessing its members 1/10 of 1 per cent of the assessed value of their property annually, for two years, and the Greater Baltimore Committee contributed another $75,000.

Charles Center was developed and announced midway through the study because, Wallace explains, at a fairly early stage it became clear that the future of Baltimore's downtown depended on the kind of growth envisioned in Charles Center and that the Charles Center site was the only place for this growth.

BALTIMORE NEWS-POST

Desolation of the Charles Center site shown here is the aftermath of the fire of 1904. Attempted re-plan went awry.

Wallace worked closely from the beginning with officials and staffs of city agencies, in particular with the Urban Renewal and Housing Agency people, with George Carter, Director of Public Works, who devised the relocation of utilities and the like, and with Henry Barnes, Commissioner of Transit and Traffic, who is still pleasantly amazed that he was asked, at the very start, to designate what streets to retain.

As a first step to making Charles Center an official city project, the Urban Renewal and Housing Agency has gotten a $95,000 city appropriation for economic consultation and assessment of relocation and land disposition problems. Land acquisition can begin immediately after approval of the plan by the City Council, and construction, in stages, would take six to eight years placing the completion date eight to ten years from now. The bond issue for the city's $17.2 million portion of the Center's cost will come up for a vote by next May. The Greater Baltimore Committee has set up a Development Committee to interest investors and developers, and has already had about twenty nibbles.

So far as can be determined now, before the City Council acts and before the results of the bond election are in—i.e., from newspaper reaction, interviews, comment by community leaders — Baltimoreans are astonishingly unanimous that the right site has been chosen, and are enthusiastic about the plan. But they are also skeptical about the time it will take. "Just what Baltimore needs, but I'll have a long gray beard when I see it," is a typical comment. Members of the Greater Baltimore Committee, who do not think they will have long gray beards when they see the Center, attribute the skepticism to the general bogged-down status of renewal in the past, and to a much publicized, long-drawn-out saga of the city's five attempts to settle on a civic center site and plan. (The Planning Council is now assisting the Civic Center Commission in selecting a site).

Charles Center, like all urban redevelopment, will cause hardship and perplexing injustices to some people now on the site. Isaac Hamburger stands as a symbol of these. For 109 years, Hamburger's, a fine men's-wear store, has stood on Baltimore Street which runs through the Charles Center site. Isaac Hamburger, third generation to operate the store, says he has spent $500,000 on improvements and remodeling in the past five years. He is the only property owner in the area who has made major improvements. Unfortunately his three excellent floors and basement are surmounted by five floors of unprepossessing office space in a dreary building at an awkward triangular location, and it is to be demolished. As a director of the Committee for Downtown, Hamburger favors the Charles Center plan because he thinks Baltimore needs it, but he is deeply unhappy about the effect it will have on his own interests. His cousin, Walter Sondheim Jr., the Urban Renewal and Housing Agency chairman, feels a sympathetic concern, but also feels that because of his position he cannot discuss the matter with Hamburger. Hamburger's real estate adviser, Hunter Moss, chairman of The Planning Council, also sympathizes but, because of possible conflict of interests, he has relinquished all his clients in the Charles Center site, including Hamburger, who needs him now more than ever.

In such a situation, the temptation is to leave the troublesome building alone and compromise the plan. But the Charles Center site is a living reminder of the pitfalls in this approach too. After the great Baltimore fire in 1904, in which most of this site was burned to the ground, Baltimore appointed a Burnt District Commission a kind of urban renewal agency of its day, which made a rebuilding plan. So many people got exceptions to it, that only about a quarter of the commission's program, mostly street widening, was carried out. In effect, this is the site's second chance at redevelopment and Baltimore is determined to make the most of it. END

Much of America's architectural heritage has already been destroyed; still more stands doomed today. Here are some tragic examples in each category. But here, too, are a few important buildings delivered from destruction, and a program for saving others.

Architecture worth saving

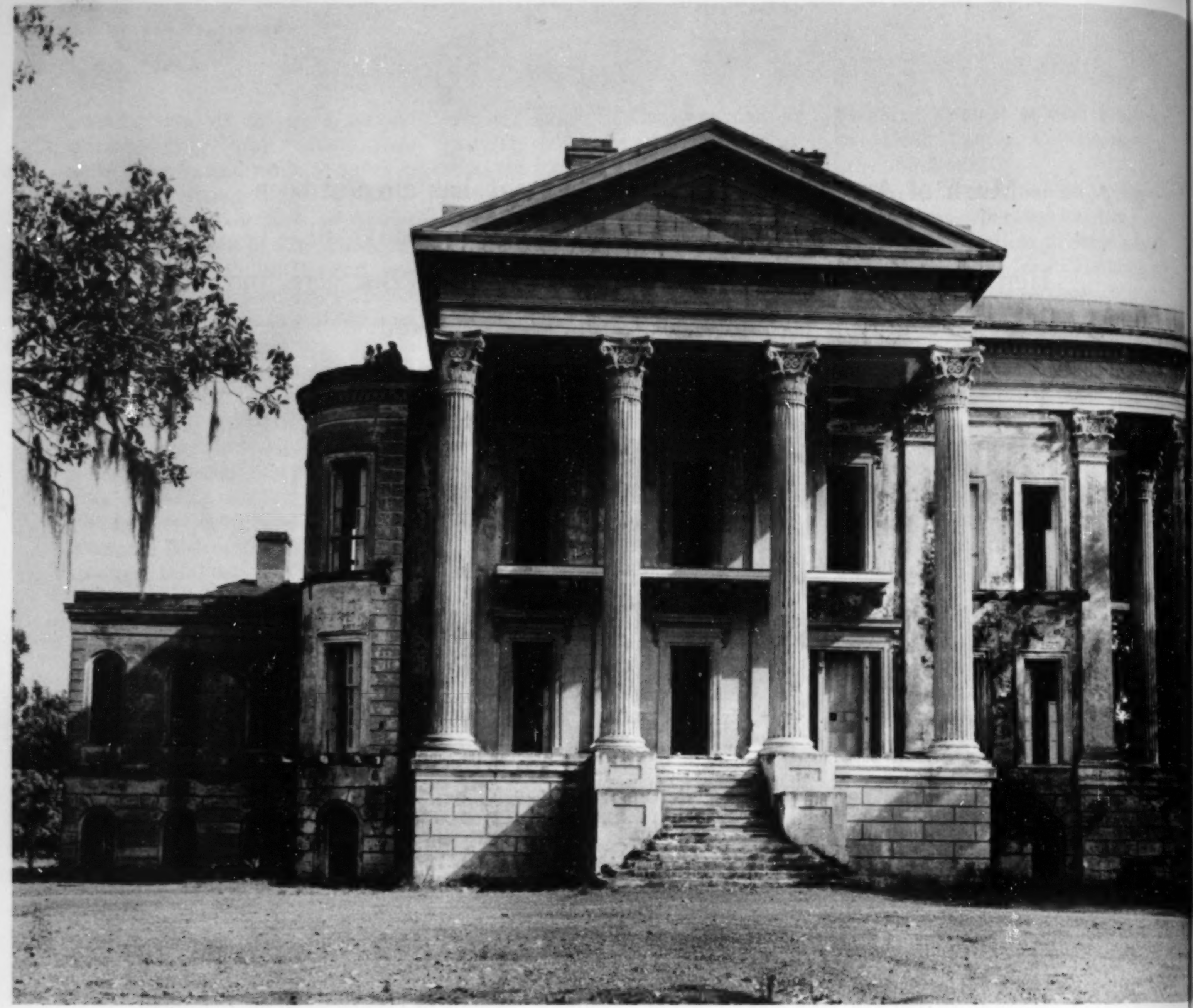
"Architecture," wrote John Ruskin a century ago, "is to be regarded by us with the most serious thought. We may live without her, and worship without her, but we cannot remember without her. How many pages of doubtful record might we not often spare for a few stones left one upon the other!"

Today, America, documented, indexed, and surveyed more thoroughly than Ruskin could have envisioned, seems to be deliberately destroying the vital record left by its architecture. And the Congress of the United States is, in this destruction, taking the lead. Its plan to extend the east front of the Capitol would trade an improvement of doubtful value and fabulous cost for the few existent stones of the original Capitol. The stones, however, are not the primary concern. The important fact is that the change would destroy a unique and historic space—the forecourt of the Capitol—and interrupt the dramatic cascade of row upon row of columns from dome to portico, which is the focus of the space.

In the case of the east front, historic events and good architecture coincide. But history is not only an affair of specific events. It is dream and spirit and flavor, too. It is the continuity of the living nation and the definition of its civilization, and man's building shows, more deeply than any other activity, the state and character of his civilization.

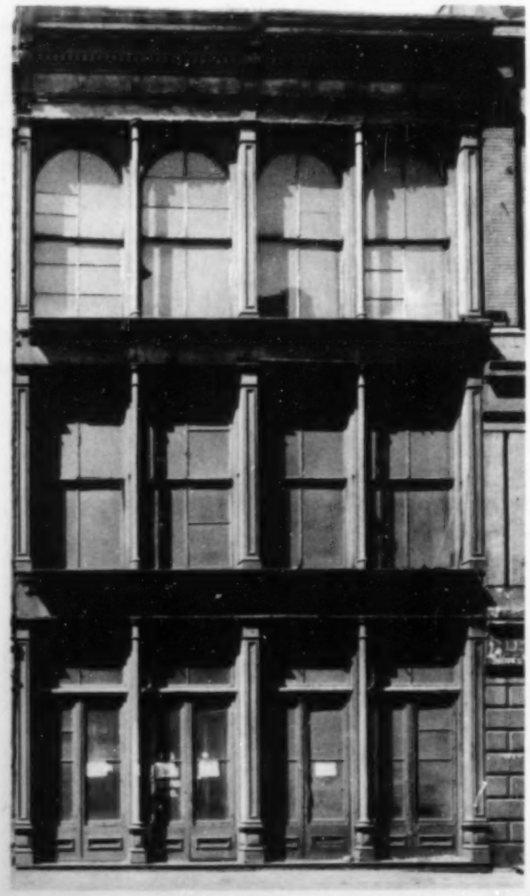
But architecture is worth saving, not only for the record, but for enrichment of the present scene—and as a source of inspiration for the architecture of the future. And unexpectedly, the cost of these important benefits can often be confined to intangible expenditures, such as imagination and humility and an appreciation of beauty for its own sake.

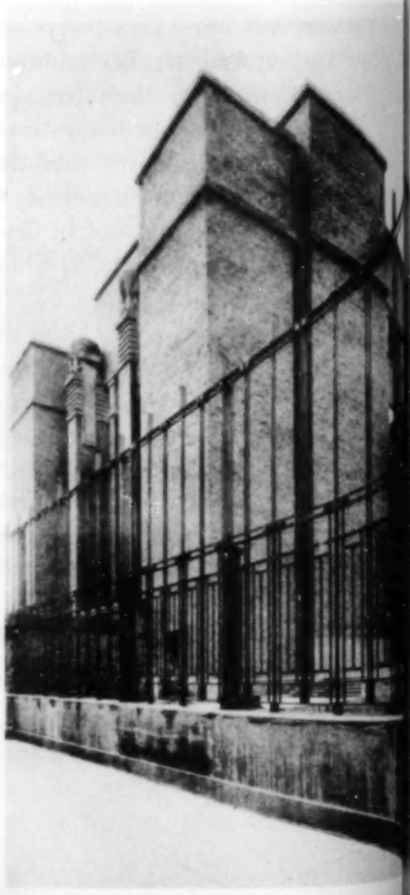
Unfortunately, the cause of preservation has been badly bleared by sentimentalists out to save everything, regardless of significance. The photographs on the following pages are a first attempt to clear the air, especially in regard to the architecture of the nineteenth and twentieth century. The selection was made in collaboration with the Museum of Modern Art and with the National Trust for Historic Preservation, cosponsors with Forum of a traveling exhibit designed to demonstrate, by example, *what* to save and to suggest, by precept, *how* to save it.



Destroyed

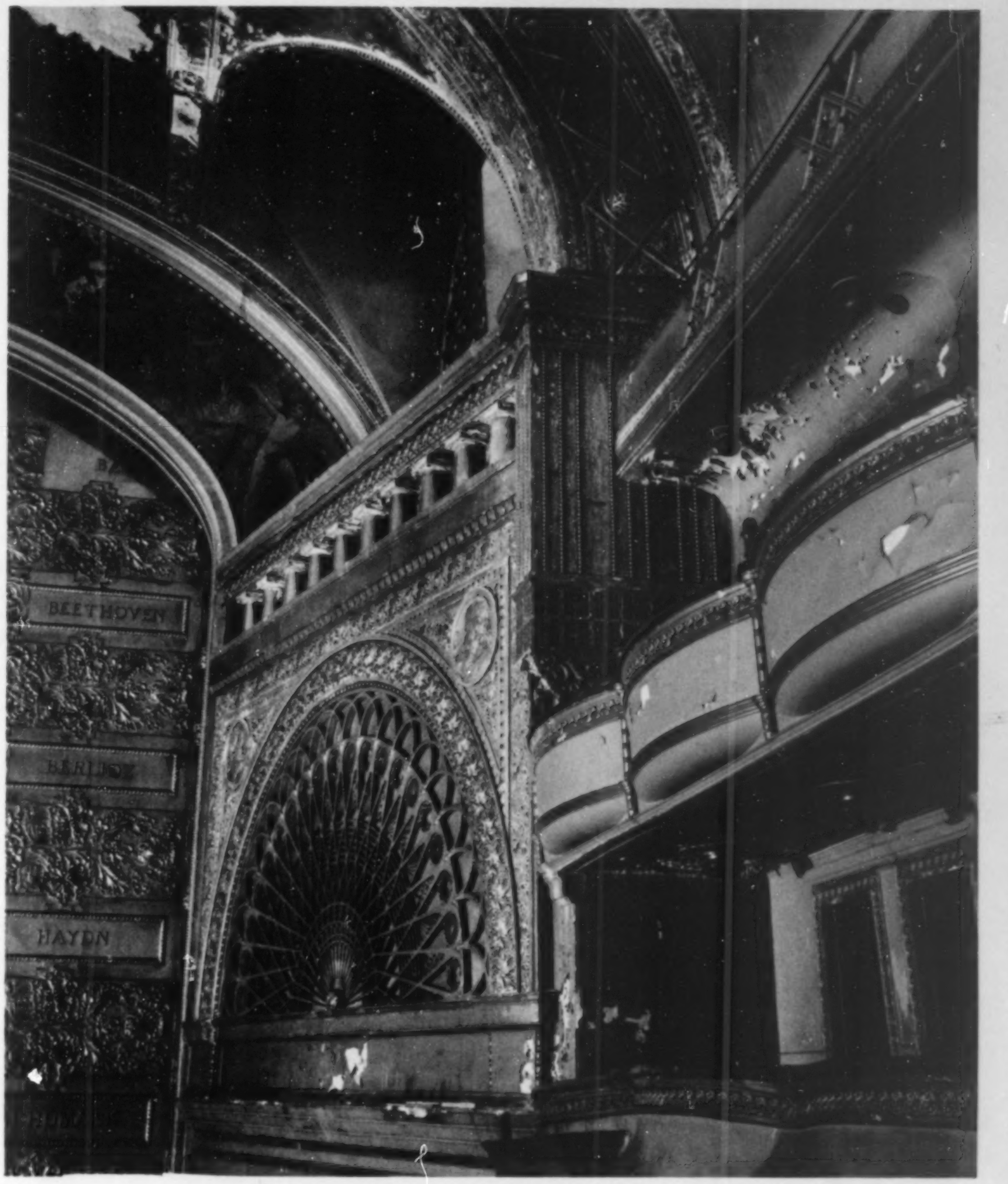
THREE EXAMPLES of the many important buildings already destroyed: Belle Grove (above), one of the great plantation houses of Louisiana, was burned by vagrants in 1952. The St. Louis iron front buildings (one example, right), built after the fire of 1849, were dismantled by the hundreds in 1939 to make way for the Jefferson National Expansion Memorial, which is now barely under construction. Frank Lloyd Wright's Larkin Building (extreme right), built in 1904, was one of the most influential buildings of modern architecture. It was torn down in 1950 after the City of Buffalo sold the property to a trucking company, which now parks its trucks on the cleared site.

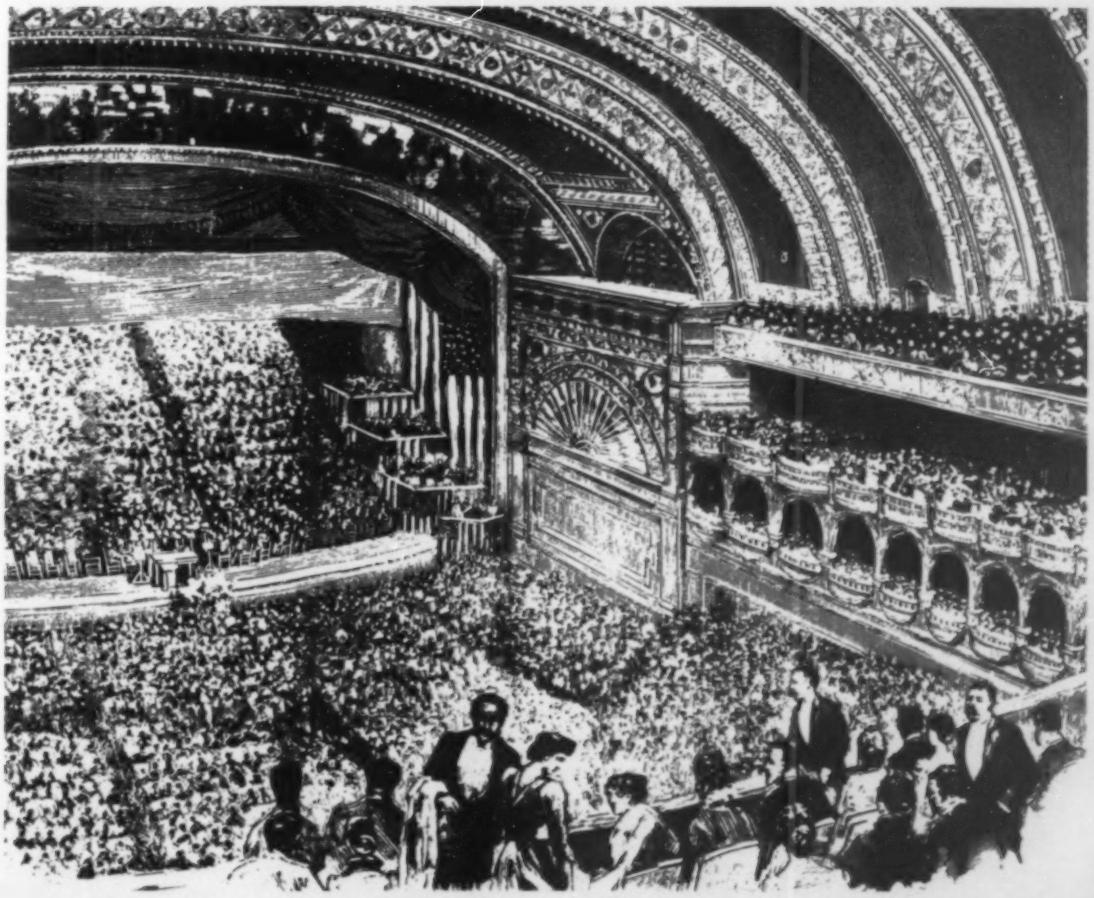




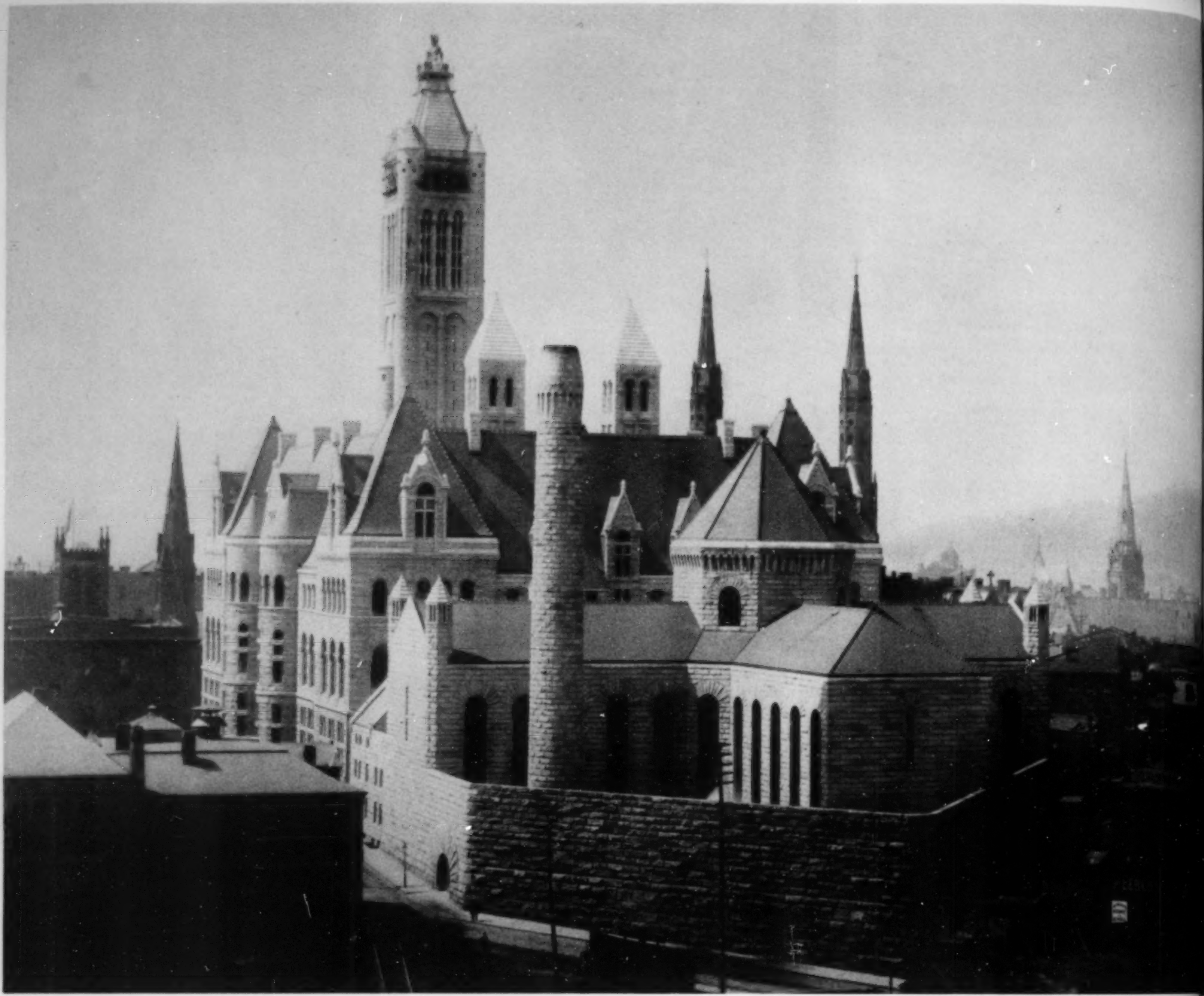
Doomed?

THE AUDITORIUM, finished in Chicago in 1889, was one of Adler and Sullivan's great achievements. Built as the core feature of a hotel and office building complex, it marked Chicago's cultural coming of age. Its brilliant opening night (right, below) inaugurated more than 30 years of active use for opera and other cultural events. In 1929, Samuel Insull, ill-famed utility magnate, removed the Chicago Opera to a new building. Only occasionally used after that, the Auditorium, considered by many the finest room for music in the world, was last used during World War II as a bowling alley. Roosevelt University, which purchased the building complex after the war, established itself in the hotel and office space surrounding the Auditorium. Despite earnest efforts, however, the University has not yet been able to obtain the funds needed to restore the Auditorium itself, notwithstanding its basic soundness, good location, and excellent acoustics.





From "Ghosts along the Mississippi," by Clarence John Laughlin, 1948, Charles Scribner's Sons; National Park Service; Museum of Modern Art; from "The Idea of Louis Sullivan," by John Szarkowski, copyrighted by University of Minnesota, 1956; from "Frank Leslie's Illustrated Newspaper," December 12, 1889.

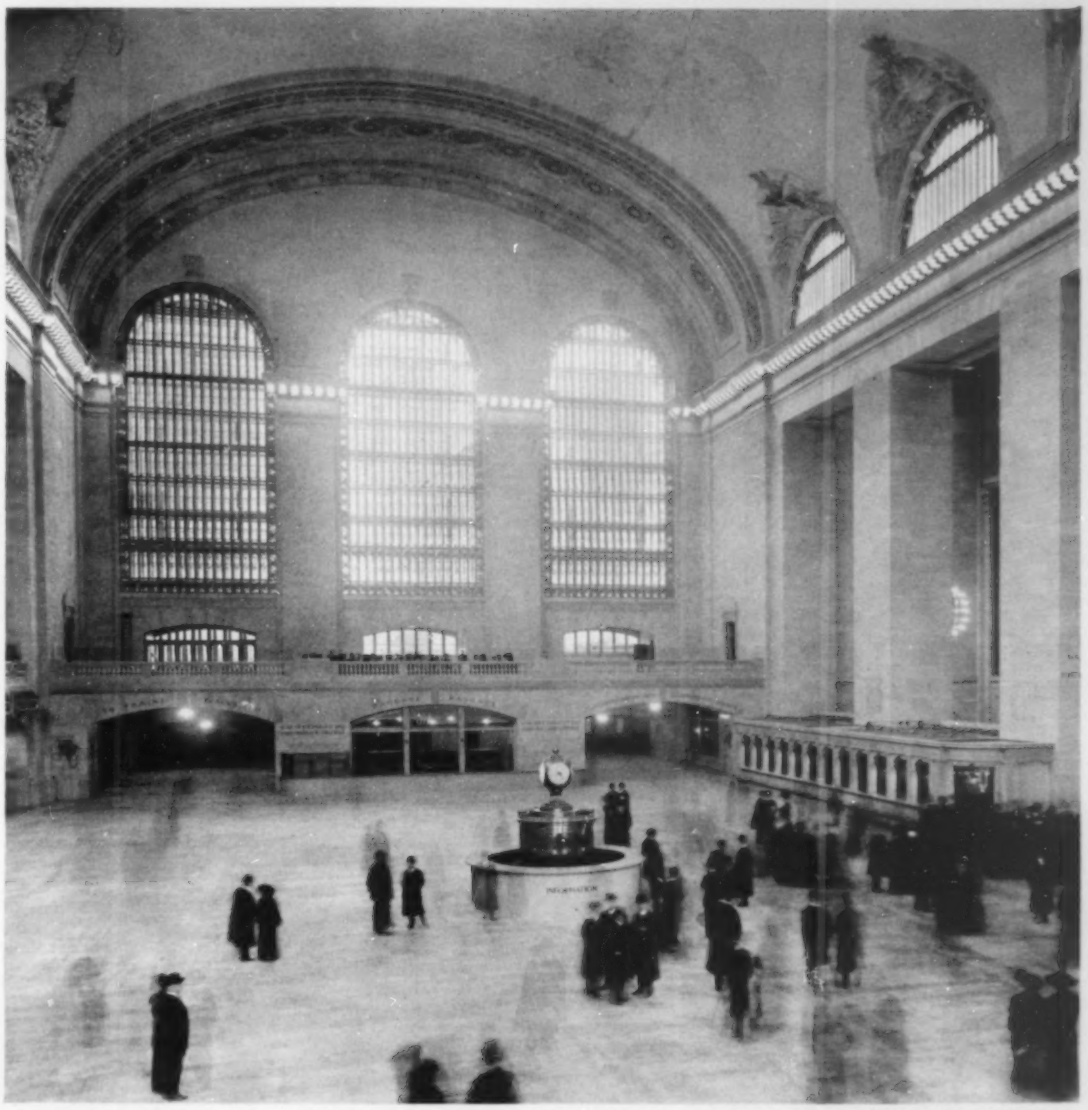


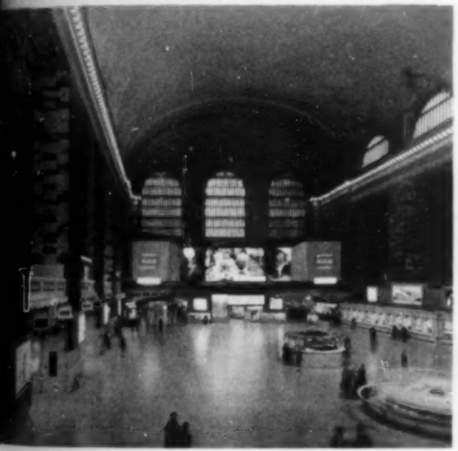
Doomed?

THE COURTHOUSE AND JAIL in Pittsburgh were completed in 1886 after the death of pioneer modern Architect H. H. Richardson. He considered the building his finest work: "If they honor me for the pigmy buildings I have already done, what will they say when Pittsburgh is finished?" Although the Courthouse (top, photo right) is not now threatened, the jail (below, photo right) may soon be torn down. While undoubtedly inadequate for its present use, the noble interior space and the stone-walled courts could be adapted to another use. One likely possibility: a Pittsburgh Museum of Industry.

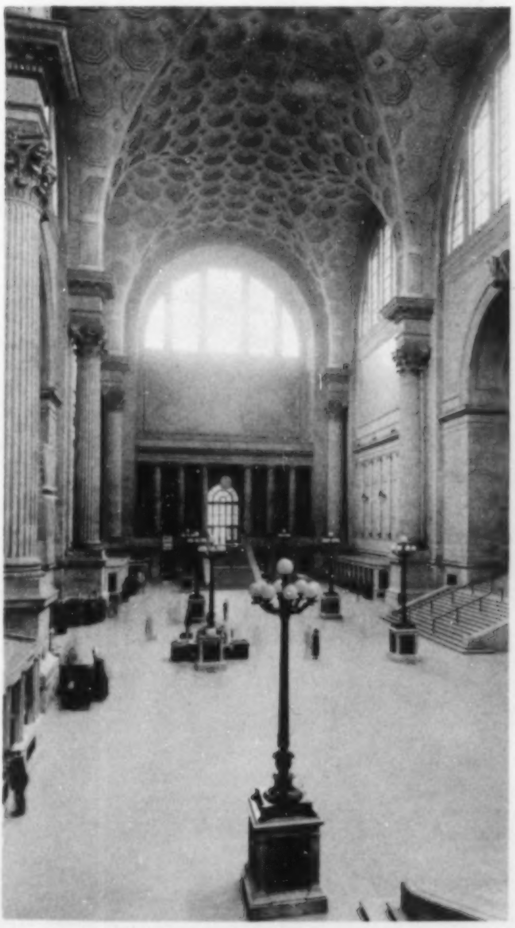
Doomed?

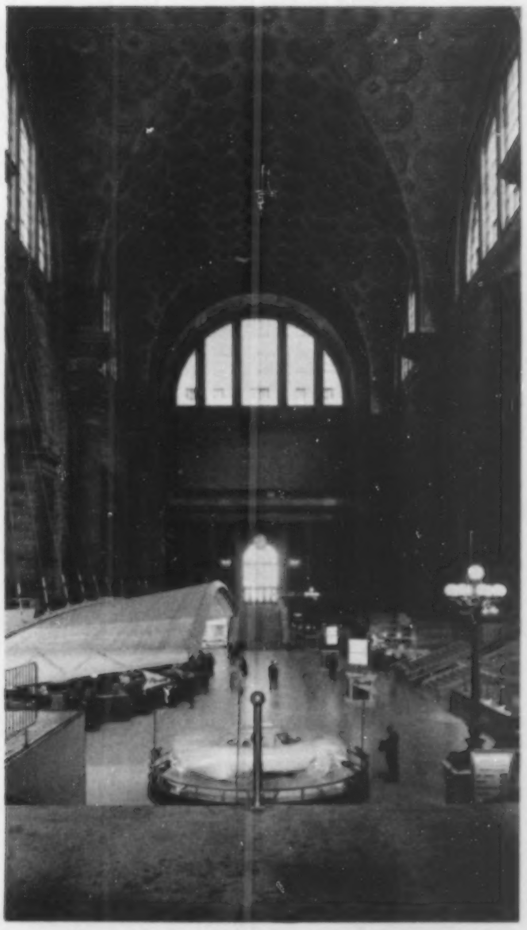
GRAND CENTRAL TERMINAL in New York, finished in 1913 to the plans of Architects Warren & Wetmore, and Reed & Stem is now overwhelmed with revolving autos and other rock-n'-roll-age advertising (below). The prime virtue of the great center concourse is as civic "open-space"—like a public square, roofed over. Unfortunately, the ubiquitous advertising art has badly damaged if not doomed the original concept of sponsors and architects.





PENNSYLVANIA STATION, New York's other Great Room, was finished in 1910. The long-admired design of Architects McKim, Mead & White was recently intruded upon by essential renovations of the ticketing facilities. But many feel it should have been done more sympathetically. The arched canopy over the new equipment, which reveals its crinkled cover to entrants from the side streets, has a form and a scale which destroys the effect of the great room as a room.

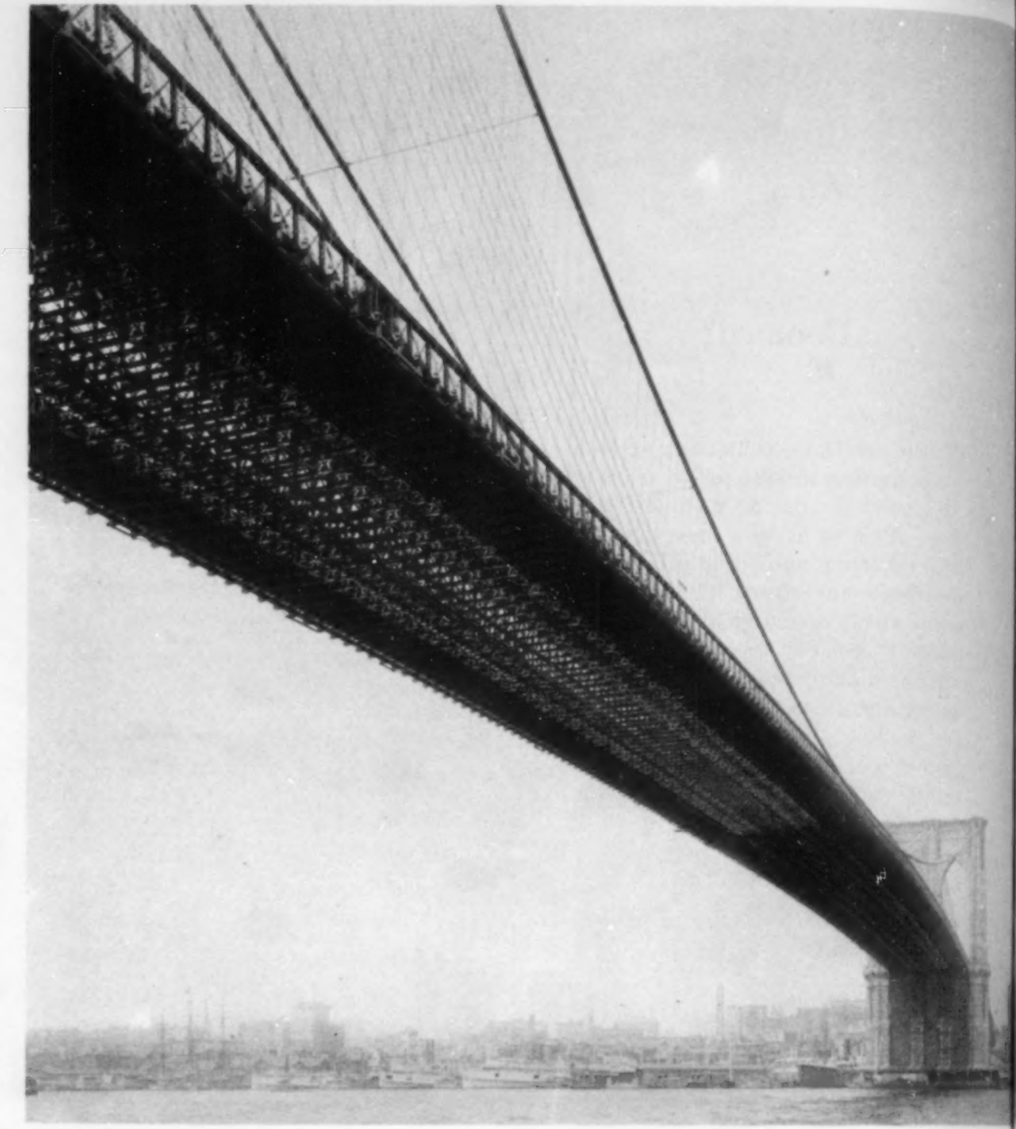


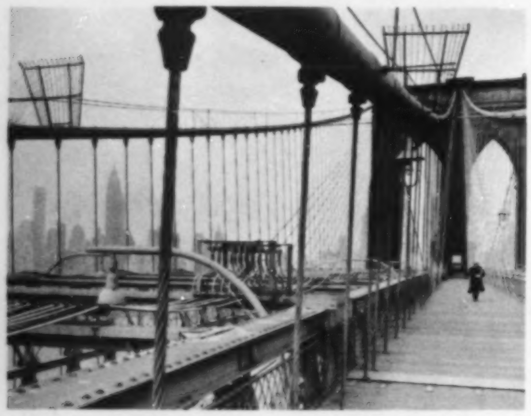


Courtesy Allegheny Conference; Fairchild Aerial Surveys, Inc.; J. Alex Langley; courtesy Alfred Fellheimer; courtesy McKim, Mead & White; J. Alex Langley.

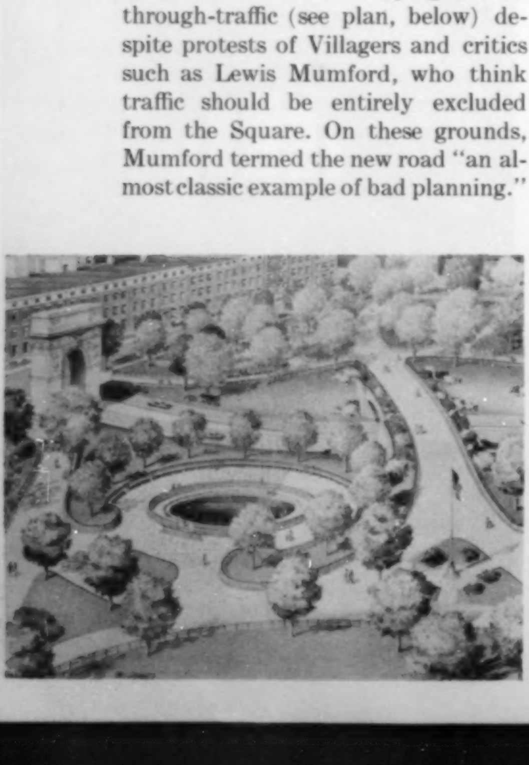
Doomed?

BROOKLYN BRIDGE, designed in 1867 by John A. Roebling and completed in 1883, is a pioneer among great suspension bridges. In 1950, its streetcar tracts were removed and additional automobile lanes were substituted. But in the process, structural additions and utility lines (below) cluttered one of the beauties of the bridge—the exciting high view of Manhattan from the pedestrian walk. Now a maze of approach roads is being built on the Manhattan side. None of the "improvements" measure up to the bold simplicity of the original Roebling idea.



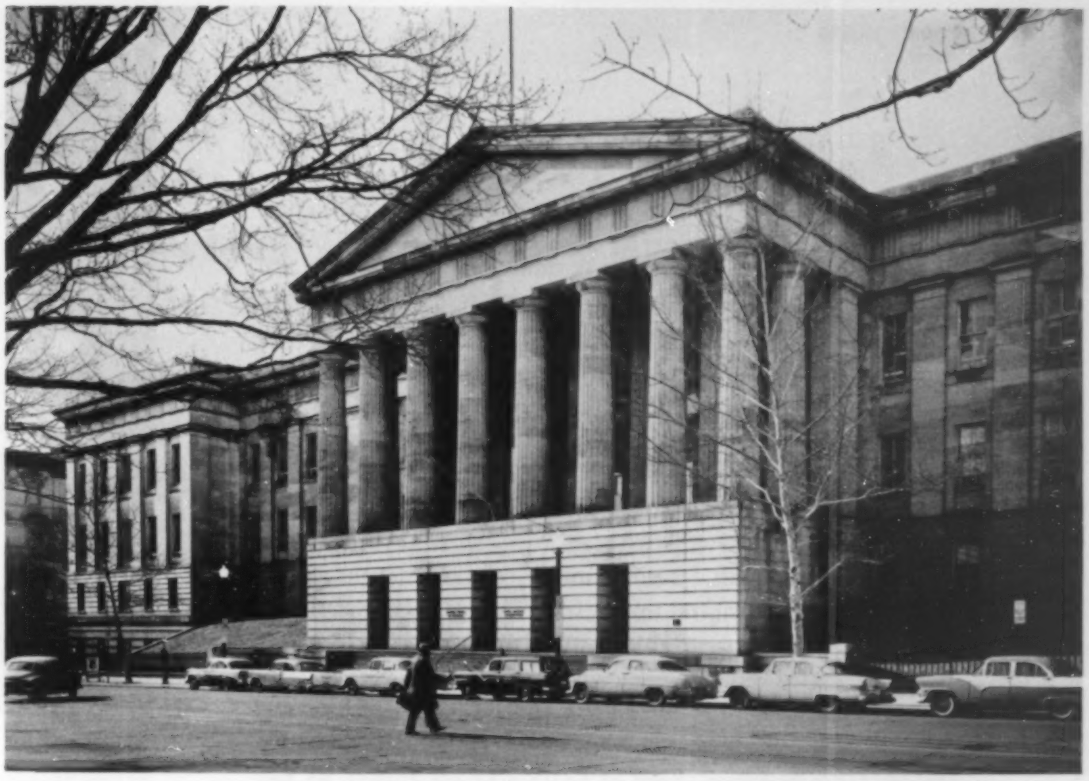


WASHINGTON SQUARE has been the center of New York's Greenwich Village since the 1830's. After Architect Stanford White's arch (photo, right) was built in 1895, bus and local traffic was admitted to the park. Now, neglected by the Park Department, the Square is threatened by further inroads in the form of a road carrying arterial through-traffic (see plan, below) despite protests of Villagers and critics such as Lewis Mumford, who think traffic should be entirely excluded from the Square. On these grounds, Mumford termed the new road "an almost classic example of bad planning."

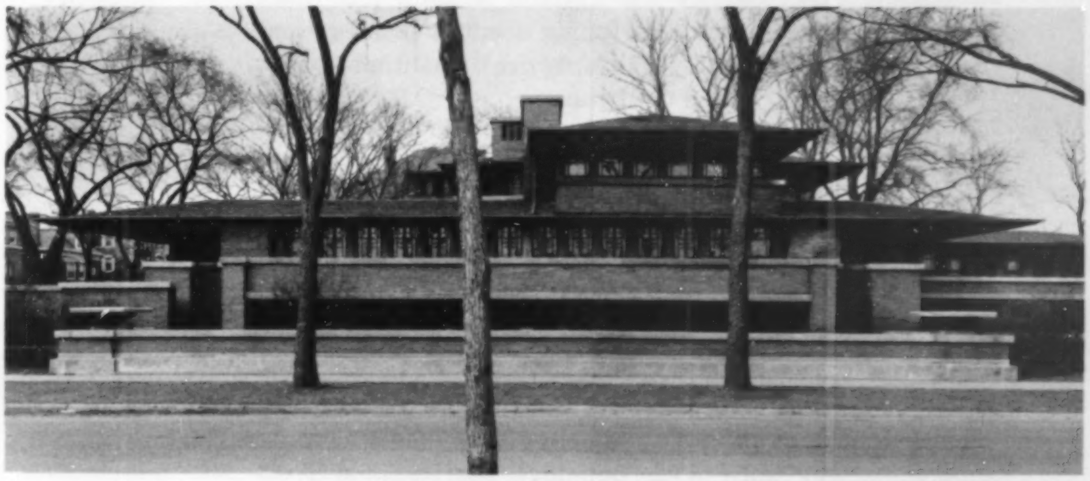


Delivered

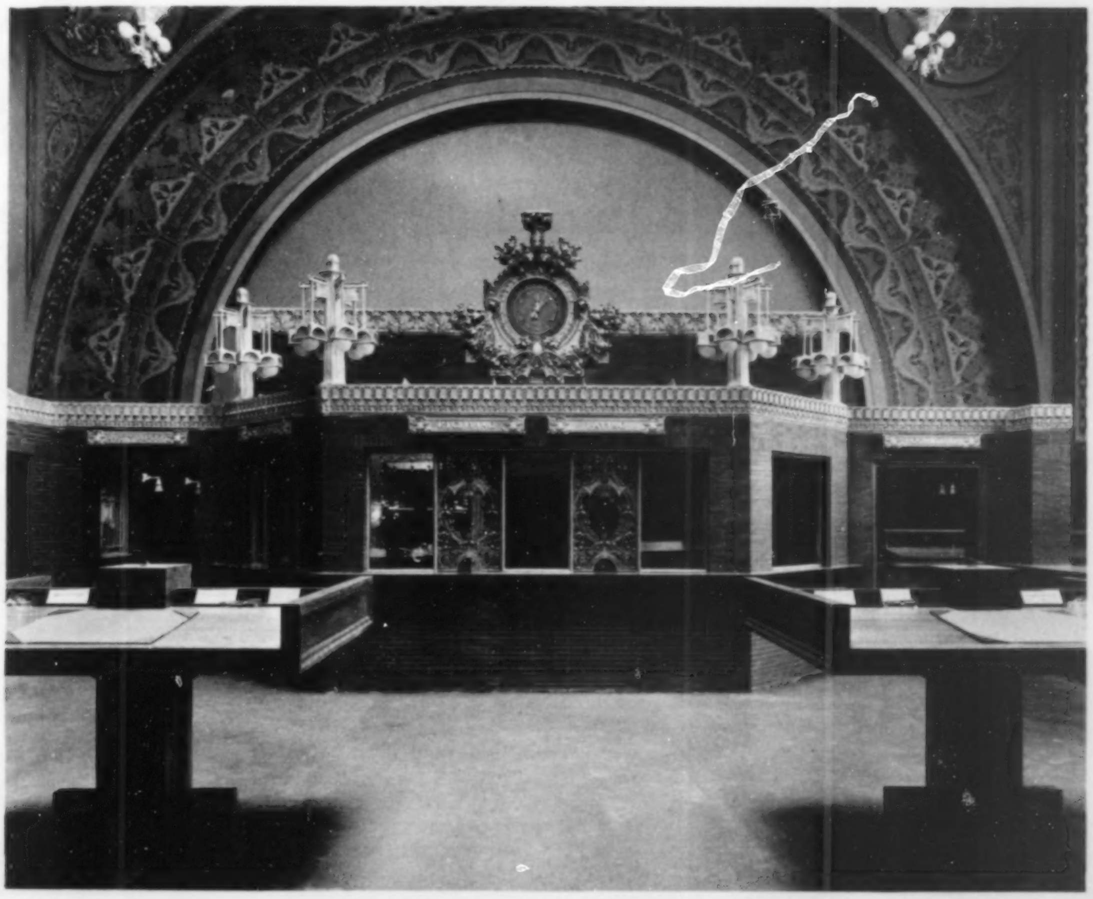
THE OLD PATENT OFFICE in Washington, D.C., which was started in 1836 to the plans of Architect Robert Mills, may be the symbol of a more hopeful trend. Scheduled for destruction this year, it was to have been replaced by a parking lot. In March, however, Congress passed a bill turning the Doric-columned building over to the Smithsonian Institution for use as a national gallery of portraiture and contemporary art as soon as the Civil Service Commission, which now uses the building, moves to new quarters.



CHICAGO'S ROBIE HOUSE, designed by Frank Lloyd Wright in 1908, was to be replaced by a dormitory by its owners, the Chicago Theological Seminary. In December 1957, a national effort obtained a stay of execution and a temporary use for the house. Webb & Knapp, who purchased the property for $125,000, will occupy it while their Hyde Park redevelopment project is underway. When they have finished using the house, it will be turned over to a national preservation group.



THE OWATONNA BANK, designed by Louis Sullivan in 1908, was nearly destroyed by careless remodeling in the 1930's. Recently, when the need to expand threatened the building further, five groups of Minnesota architects and historians prevailed upon the owners, the Security Bank & Trust Co., to proceed with care. On the recommendation of the professional groups, the bank employed Architect Harwell Harris as consultant and proceeded to adapt the building to modern needs without destroying its architectural character.



Ben Schnall; The Bettmann Archive; drawing; staff photo; Robert C. Lautman; Aaron Siskind and Richard Nickel; Chicago Architectural Photographing Co.

A plan for local action

In many cities and towns throughout the U.S., there are hopeful signs of an aroused interest in saving notable examples of American architecture. In Bridgeport, Connecticut, for example, the threatened demolition of the Harral-Wheeler house (1) by the city was an important issue in last fall's mayoralty campaign. In San Francisco, the State Highway Department's plan to plaster an elevated highway against the face of the venerated Ferry Building (2) raised a storm of protest that ultimately involved more than 30 government departments, newspapers, and professional and citizen groups. Unfortunately, in the latter case public opposition came too late.

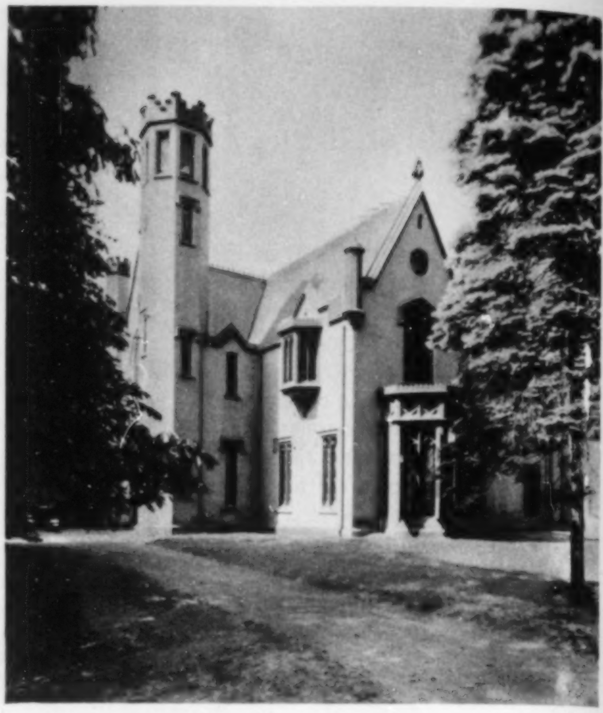
A successful civic preservation policy requires continuous planning. Too often, as in the case of the 1850 Dayton, Ohio Courthouse (3) there is no planning for preservation because there is no *immediate* threat to the building. Yet the fine old Dayton building has been threatened before, and everything about it—its location, its present use, its atrophied physical condition—virtually assures that it will be threatened again. Preservation efforts should begin now.

Fortunately, the local chapter Preservation Committees of the American Institute of Architects are now prepared to advise local groups on whether or not a building is worth preserving. All chapters have nearly completed records of buildings worth saving. But a mere list is not enough. The depression-born U.S. Park Service survey recorded some 7,600 important buildings built before 1860. More than 25 per cent of these buildings have been destroyed since 1933. To promote interest—and action—in preserving worth-while buildings, the National Trust for Historic Preservation (2000 K St., N. W., Washington 6, D.C.), a private organization chartered by Congress, is now operating a national clearing house and information center on preservation matters.

Contrary to popular opinion, preservation is seldom a matter of saving a building in the face of "progress." More often, the loss can be charged to simple ignorance of the architectural value of the structure. And often the problem is not to save the building from demolition at all, but to prevent it from being destroyed by bad remodeling. Unfortunately, most architects think that they can "improve" anything.

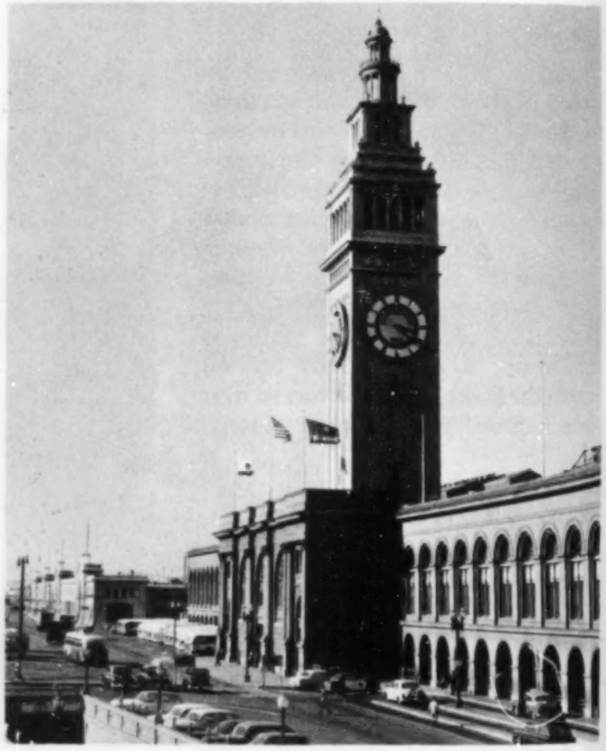
In few cases can a piece of architecture worth saving be turned into a museum. More often, new uses and new owners must be found.

Sometimes, however, the only hope is legislation, which places important works of architecture—indeed entire districts of good architecture—under special zoning and building controls of the municipal government. Such legislation is being successfully used in Philadelphia, Boston, and other cities, and it would go a long way to solving knotty preservation problems elsewhere.



Richard Wood

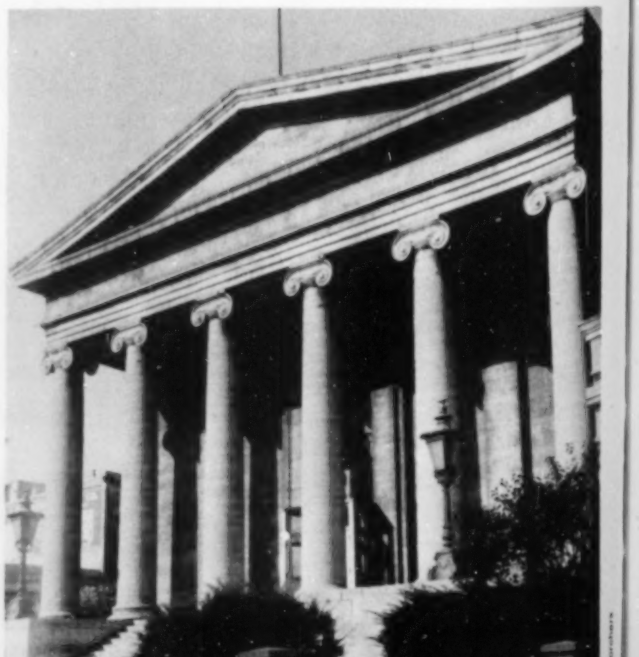
1



Otis Demewood

2

3



Perry Borchers

In today's tax-oriented economy rental housing suffers a great disadvantage. One reason: tax laws force renters to pay as much as 66 per cent more than home owners for equal accommodations.

The high cost of renting

BY STEPHEN G. THOMPSON

The deterioration of America's cities has been recognized as a national problem ever since the Housing Act of 1949 authorized federal grants for slum clearance and redevelopment. In his budget message last January, however, President Eisenhower proposed shifting a greater share of the renewal burden to state and local governments. This objective, while laudable in principal, is more difficult to justify in terms of economic equity. For there is considerable evidence that federal renewal subsidies may only partially compensate for federal tax discrimination against urban building that seriously aggravates the insidious decay that is spreading over so many U.S. cities.

Certainly, before there is any curtailment of federal responsibility in this area, a close re-examination should be made of the extent to which federal tax and housing laws conspire against healthy urban growth and maintenance. Most postwar housing has gone up in the suburbs, and virtually no new urban quarters have been built for middle-income families. High land values and rising building costs in the cities are frequently blamed for the great postwar migration to suburbia. But, surprisingly, hardly anyone has blamed the exodus from the cities on taxes, or has stopped to ask how well it may serve the total community interest to promote, through discriminatory tax policy, the relocation of the great bulk of the nation's middle-income families in the suburbs—leaving the cities only for the very rich and for those too poor to undertake home ownership.

Yet as Louis Winnick, economic consultant for ACTION (the American Council to Improve Our Neighborhoods), puts it: "As things now stand, there are not enough inducements for investors, brokers, bankers, and builders to give much attention to new rental housing. The inducements favor home ownership." Almost all the factors that discourage rental construction in the cities, moreover, also deter the construction of rental housing in the suburbs. Thus the cities, with their old and aging buildings, contain almost the only available rental quarters. As federal housing policies that favor home ownership lure more and more middle-income families into suburbia, cities degenerate more and more into vast, crowded concentration centers for minority groups and families too poor to buy homes. What compounds this unwholesome situation is the fact that these minority groups are also experiencing a great growth in numbers.

Present federal policies are thus indirectly contributing to slum growth and urban decay. And until this situation changes, the cities can legitimately claim that they deserve, if anything, an *increase*, rather than a reduction, in federal aid for their renewal programs.

Landlord tax collectors

Even a cursory examination of federal tax policies shows that the disadvantages inherent in the construction and operation of rental houses or apartments are considerable. In the first place, any rental housing profits—and except for "cooperatives" and public housing, no apartment housing is erected unless there is the prospect of making a reasonable profit—are taxed by the federal government. Although the owner of the building makes the actual payment, the rental family really pays this tax—indirectly.

To obtain some indication of how much of the average family's rent ultimately goes to the federal government, FORUM queried dozens of apartment owners and apartment managers in 15 U.S. cities. Naturally, every property had a different tax status, depending on the depreciation allowable, and the tax bracket of the corporate, individual or partnership ownership. Nevertheless this random sampling definitely showed that rental families, concentrated in cities, account for surprisingly large indirect tax payments to the Federal Treasury—payments that home owners do not have to match. In fact when adjusted to a "per room" basis, the survey showed that sample rents for four-room apartments in New York last year included federal taxes ranging from $72 to as high as $400 per year. Similarly the tax bite on a group of Chicago rents ranged from $170 to $265 a year; the tax load in St. Louis was $135; in San Francisco, $480; in Detroit, $324.

Since home ownership, by contrast, is a nonprofit operation, it escapes any burden comparable to this federal income-tax levy that is an integral part of the rent paid by any apartment family.* Instead the

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* In some European countries, home owners *do* pay tax comparable to that paid by renters based on the "imputed rental value" of their houses.

U.S. home owner actually enjoys a special tax advantage: before paying his personal income tax he can deduct from his taxable income all mortgage interest and real estate taxes paid—a privilege not available to renters because they do not pay these charges directly. Winnick's estimate of the amount of revenue the Treasury might sacrifice if equitable and similar tax-deduction privileges were extended to renters provides a rough measure of the amount of tax discrimination against the nation's rental families under present law. His estimate: up to $1 billion a year.

Hit from two sides

What discourages the construction of rental housing most is the two-way spread between the deductibility privileges available to home owners and the direct taxes on landlords' profits. In this tax abyss, FORUM estimates, the penalty on the rental family may easily range from 33 per cent to 66 per cent or greater above home-ownership costs for comparable housing.

For instance, a home owner in the 30-per-cent income tax bracket could live in his own $20,000 house for a net cost of $1,457 a year—after home-ownership deductions (see chart, page 103). But a family renting an identical house (or a comparable $20,000 apartment) under virtually the same financing conditions, and with the same operating expenses and real estate taxes—would have to pay at least an extra $488 a year for its shelter—or 33 per cent more than the home owner. And the extra $488 paid by the renter would include a $388 differential in tax liability between home owner and tenant.

If rental buildings are owned by corporations, of course, the rents must reflect the 30-52 per cent corporate income taxes paid by the owners. If they are owned by individuals, the net rental income may be subject to rates even higher than 52 per cent, and, competition permitting, the rents must be higher, too. If the rental house previously mentioned (or a $20,000 apartment unit) was held by a 50-per-cent tax bracket owner, instead of a 30-per-cent owner, for instance, to yield the same after-tax profit under the same conditions, the rent would have to be $631 or 43-per-cent (rather than 33-per-cent) higher than the comparable net home-ownership costs. The rub comes, of course, when market conditions will not support higher rents—or economically justify any new construction. This may occur because there already are vacancies in existing, competitive rental units, or, under present circumstances, because the differential between home-renting and home-owning costs may be so great that the ordinary family cannot afford to ignore the substantial savings available through ownership.

Sock the landlord

Cities themselves often impose an additional tax burden on renters. Apartment properties frequently are assessed for municipal tax purposes relatively more heavily than single-family homes. This is usually done on the politically appealing assumption that the landlord will be able to pay the added taxes out of his profits. As a result of this "sock the landlord" tendency, even before World War II it was not uncommon for apartment properties in some cities to pay as much as $1 out of every $5 of rent in local real estate taxes. And there are signs that the ante is getting higher in some cities. In Boston, for example, one 40-unit apartment building paid $8,600 in real estate taxes last year out of a gross rent roll of $30,660, or more than 28 cents out of every rent dollar. But the municipal bite varies widely. A 56-unit building in adjacent Cambridge, by contrast, paid only $9,801 out of gross rents of $48,000, or only 20 cents out of each dollar.

The states, too, frequently hit the renter with higher taxes than the home owner. Some states, for example, give veterans special home-ownership tax exemptions. And, in the several "homestead law" states there is further avowed, undisguised tax discrimination against rental housing, in the tax exemption accorded to home ownership.

Tax impact on building

While housing experts generally agree that the tax cards are stacked against renters, they disagree on whether federal or local taxes are the greater deterrent to the construction of middle-income rental housing. Two owner-builders of apartments in Kansas City, for example, report that they never consider federal income taxes as a determining factor when planning new projects. Los Angeles Realtor Henry G. Beaumont, former president of the Management Institute of the National Association of Real Estate Boards, also takes this view: "I don't think you will find anyone who directly incorporates his federal income tax in his rent schedule calculations." Melvin Dubinsky, St. Louis realtor and civic leader, noting that city levies against apartment properties there have just about doubled in ten years, says: "Our real estate tax is the major bar to construction of new rental property." A spokesman for Boston's rental housing association declares: "From 25 to 40 per cent of our rental dollars go for local taxes. The federal taxes are just peanuts compared to that."

On the other hand, federal income taxes come in for a variety of brickbats, too. Says a leading Chicago realtor and mortgage expert: "Federal taxes have deterred new rental housing. It's hard to say to what extent, but I'm sure they have. The biggest problem is that the current tax structure is not conducive to the assembling of large funds by individuals or small groups of investors. A man with a lot of money would rather invest in a securities investment trust than in real estate. Until you can obtain equal tax benefits for real estate trusts [i.e., conduit tax treatment]—you will not attract large investments to new rental housing."

Still other experts, however, insist that the accelerated depreciation rules for new construction, adopted in 1954, do make new apartment construction now a reasonably attractive investment—for perhaps the first seven to ten years of a structure's existence (FORUM, May 1955). But after that the owner had better sell or dispose of such property if he wants to avoid a sharp cut in after-tax income.

In some cases, rapid write-off will even permit a new rental property to show a tax-report loss while actually throwing off a substantial cash return in its early years—with this "book" loss also available to reduce the builder's taxes on some of his other income in the top brackets. All this legerdemain, of course, only dramatizes the quirks and inconsistencies of the federal tax laws: in rental housing, the laws serve to encourage "tax-deals" while discouraging more conservative builder-investors from erecting projects to be held and operated over prolonged periods as steady, consistent income-producing properties.

What prospects for relief?

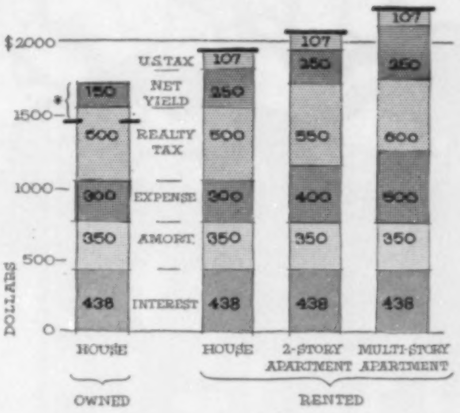
With easy-purchase, FHA and VA terms luring all but the lowest-income and minority families to the suburbs, and with federal tax discrimination adding to the heavy burdens of local real estate taxes, what corrective steps can big cities take to spur the new middle-income rental construction they sorely need if they are to arrest urban decay and maintain a healthy municipal economy?

First of all, U.S. cities would seem to have an immediate need for a new type of expert or consultant who might be described as a "municipal economist" or "urban tax specialist." His job would be to study all the interrelated tax problems bedeviling a city, and to recommend realistic revisions in local tax policies that would do the most to promote over-all municipal fiscal health and urban revitalization. On the national level, through cooperation and joint studies, such experts could recommend specific, appropriate changes in federal tax laws and other policies that would halt the needless debilitation of cities, and help stimulate new urban housing for all income groups.

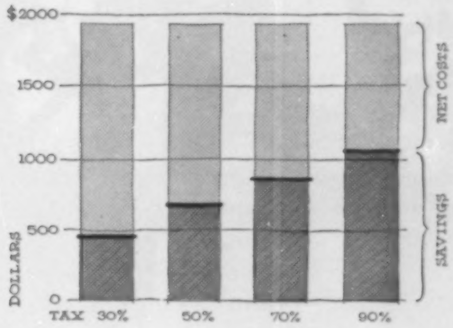
Once a greater number of city officials wake up to the seriousness of the extent to which U.S. tax policies are undermining their own main tax source (real estate), mayors from all areas can unite and

continued on page 182

The renter's hidden tax burden



* Tax deduction savings—$281.



Under basically comparable conditions, people who rent instead of own their own homes carry an extra, invisible—and surprisingly heavy—federal tax burden that home-owning families are spared.

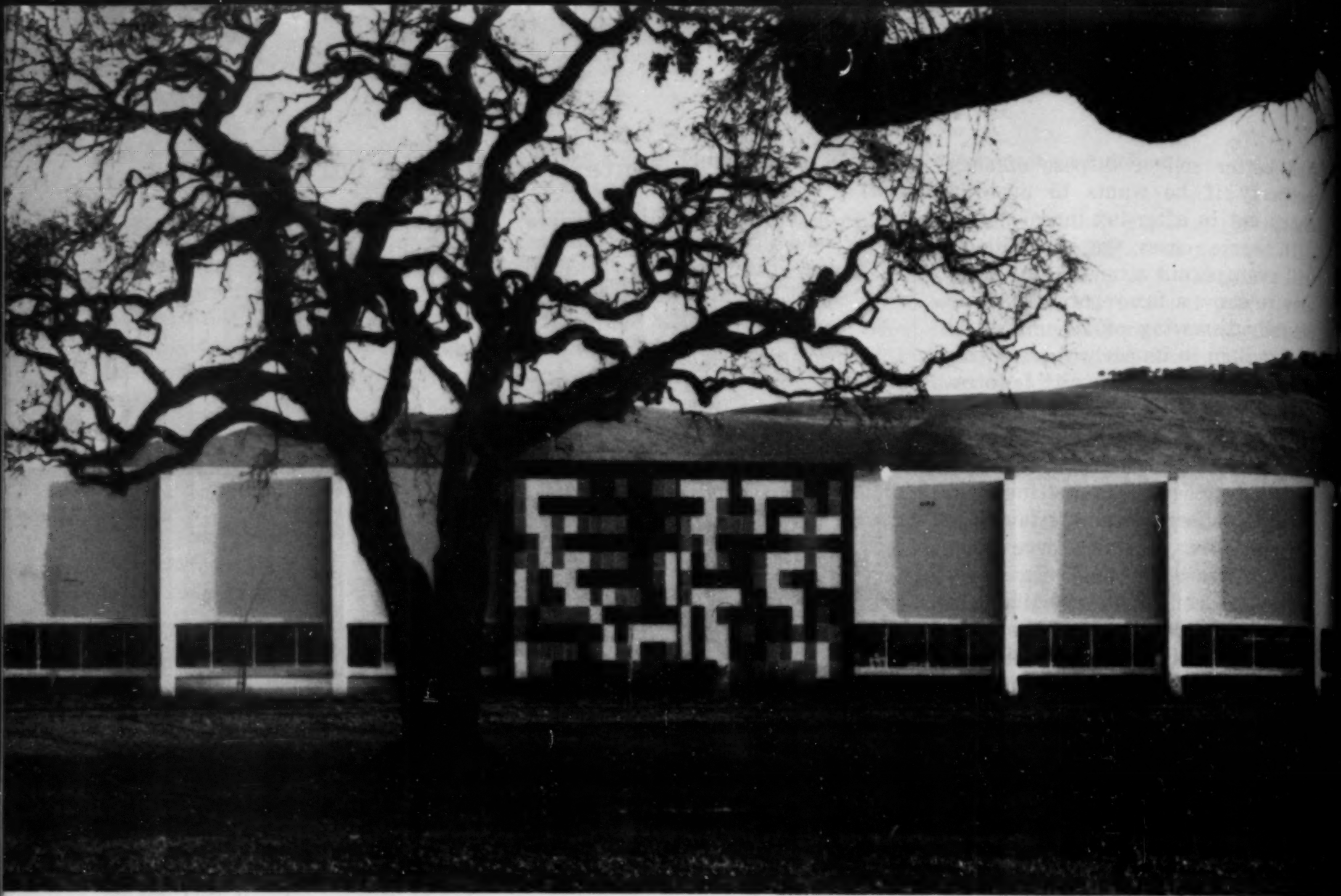
In the left-hand chart above, the first bar shows that the owner of a hypothetical $20,000 home would pay $1,457 net per year for taxes, mortgage interest, and amortization, etc. The other bars show the comparable "housing cost" if the same person rents the same house, or a $20,000 apartment. The second bar, for example, shows that the house renter must pay an additional $488, or 33 per cent more. Only $100 of this extra cost reflects more "investment" profit for the landlord on the rental unit. The other $388 of extra cost results directly from the different federal tax rules applicable to home owners and to home renters. One portion of this $388 tax differential consists of $107 in federal taxes that the landlord must pay on the profit realized from this rental house, and which (competition permitting) the landlord actually passes on to the renter. The other $281 of extra cost reflects the home owner's lower federal taxes, because he is allowed to deduct his interest and real estate tax payments in computing his taxable personal income. The same interest charges and real estate tax payments are made on the rental house, but the renter gets no deduction privileges.

The other two bars in the first chart show the rents ($2,095 and $2,245 a year) which would have to be paid on rental units which cost $20,000 to build in garden-apartment and high-rise apartment buildings. They would be 43 and 54 per cent higher respectively than home-ownership costs. The additional costs here result from assumed higher operating expenses and real estate taxes.

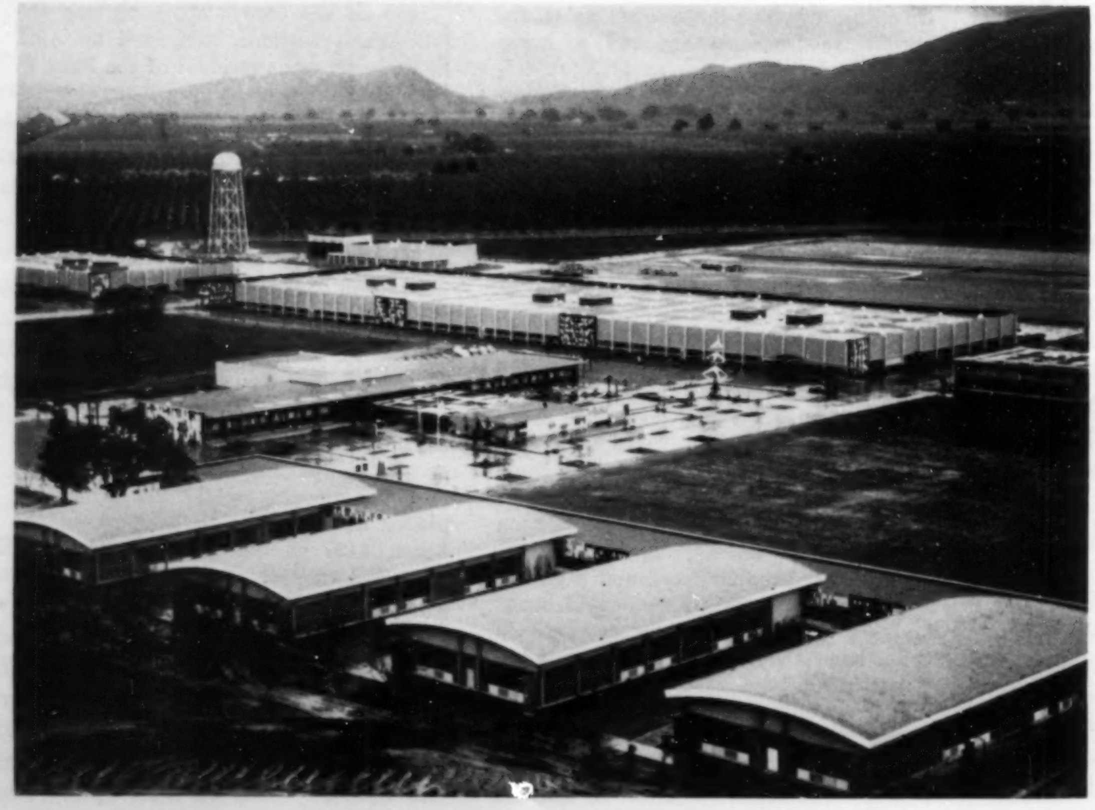
For uniformity, all the properties compared in the first chart are assumed to be owned or occupied by individuals or corporations in the 30-per-cent tax bracket. At higher tax-levels the gap between the cost of owning and renting is even greater.

The right-hand chart above, for example, shows how much families in various income-tax brackets could expect to save on their annual housing costs if they bought the same hypothetical $20,000 house discussed above, instead of renting it for $1,945 a year. Whereas a family in the 30-per-cent bracket saves $488 a year through home ownership, in higher tax brackets the savings climb geometrically due to progressive taxation, and net home-ownership costs become smaller and smaller—only $894 a year in the case of a taxpayer in the 90-per-cent bracket. His savings in this case: $1,051.

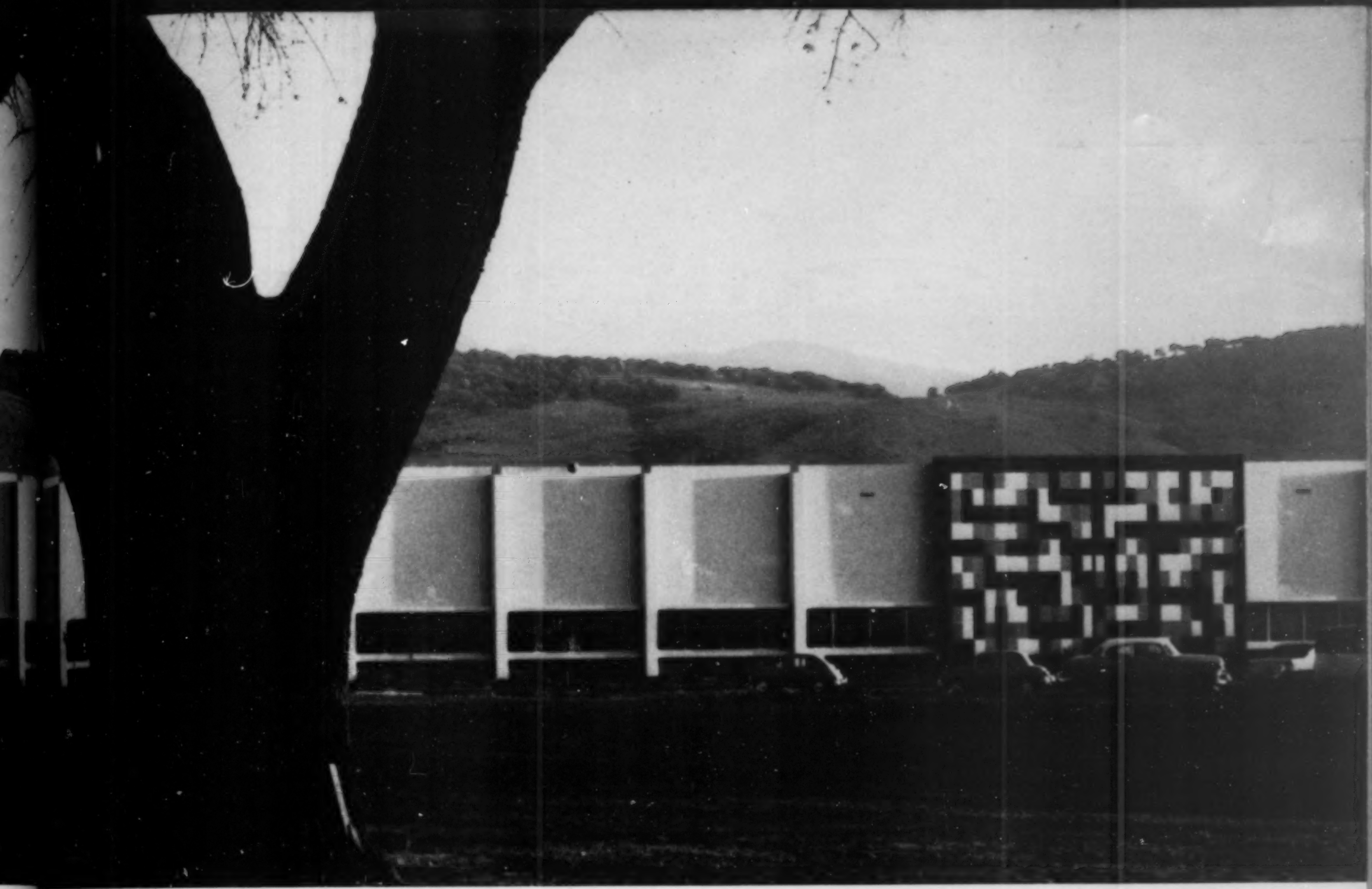
Both of the charts above assume the following conditions, suggested by Alan Rabinowitz, vice president of the Fred F. French Management Co., owner-operators of both garden apartment and elevator-type rental properties in the New York area. All units were acquired with an initial equity investment of $2,500, which was also the land value. All pay $438 annually for interest, which is 5 per cent on an average $8,750 balance on the original $17,500 mortgage (50 per cent). All units pay $350 a year, or 2 per cent, for mortgage amortization, and this is also the depreciation allowance on the rental units. Real estate taxes are assumed to be $500 on the house, but $550 on garden apartments, and $600 on high-rise apartments, while operating expenses are assumed to be $300 on the house, $400 on the garden apartments, and $500 on high-rise apartments. The home owner is charged with an imputed 6-per-cent return ($150) on his initial $2,500 equity, and rental unit owners are assumed to earn only $250, or 10 per cent after taxes, on their initial investments of $2,500 per unit, notwithstanding the fact that they also face the risk of vacancy losses from time to time.



PHOTOS: (BELOW) ROBERT SKELTON; (OTHERS) ERNEST BRAUN

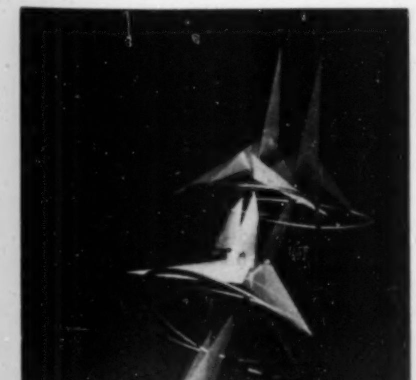


Bright panels of ceramic veneer stand in bold relief against the concrete-walled, five-acre manufacturing plant (above). Air photo (left) also shows cross-shaped cafeteria and four arch-roofed education buildings flanking a central paved terrace. A five-story administration building is planned opposite the cafeteria.



Out on the West Coast, IBM is tempering the awesome world of electronics with art and human scale.

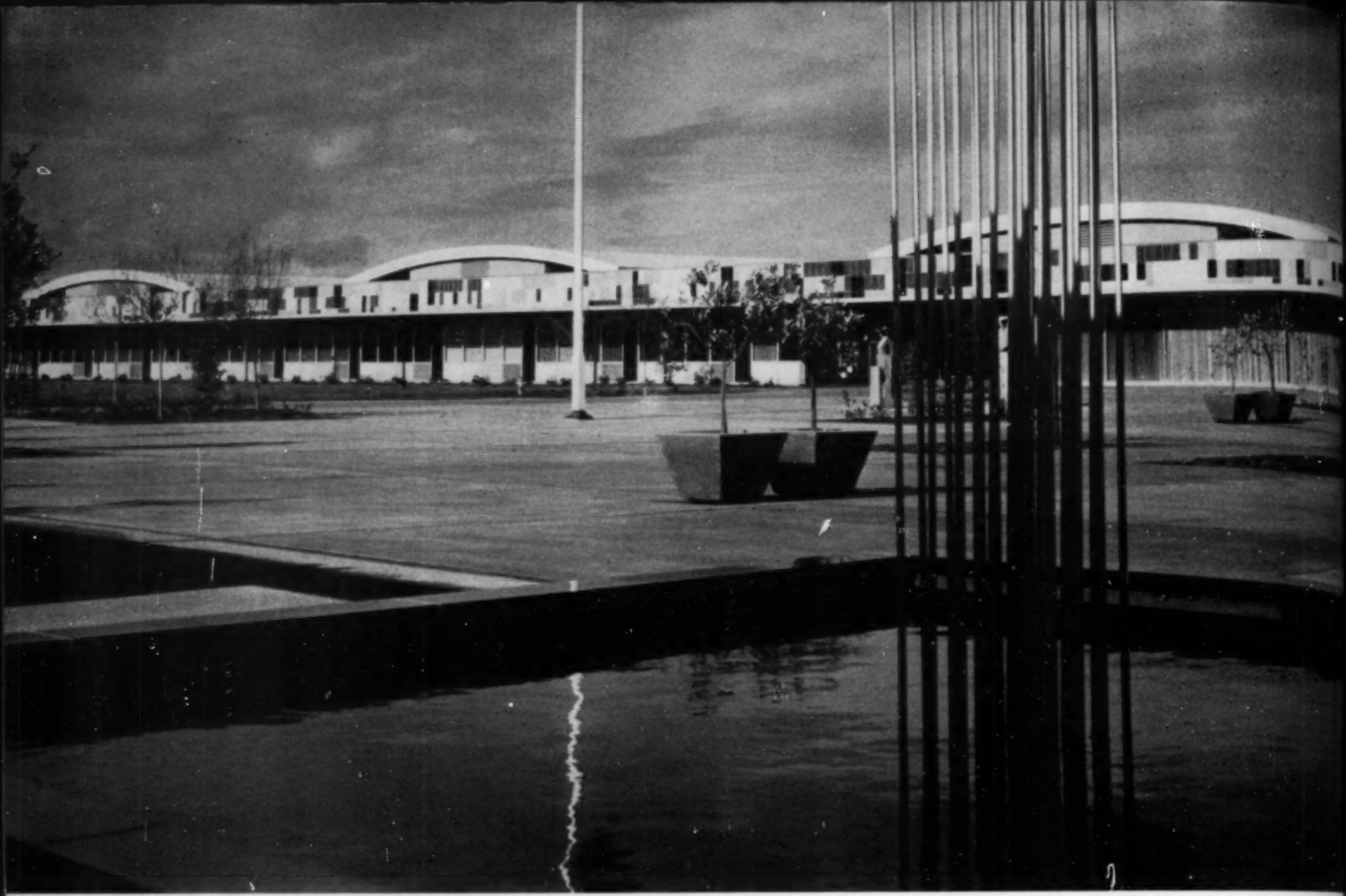
IBM's new industrial campus



For the past two years, International Business Machines Corporation, to match the advancing technology of its products, has been quietly establishing a new look for itself in everything from showrooms to trademarks (FORUM, February 1957). Now, with the completion of a complex of industrial facilities at San Jose, in Santa Clara County, California, it is apparent that along with advanced technology and smart design the electronic-age IBM industrial campus retains some old-fashioned amenities, and includes some exuberant, inexplicable art as well.

The art, consisting of sculpture like the 40 foot aluminum "Hydrogyro" by Sculptor Robert B. Howard (left), and bright-hued ceramic veneer murals, does yeoman service in making the spread-out plant a warm and pleasant place to work.

As the campus arrangement suggests, the San Jose plant (photo, extreme left) is more than a manufacturing center. Completed to date on the 210-acre ranchland site are separate building groups for research, product development, employee education, and maufacturing, all centered around a cafeteria and lounge building. Future development will include additional manufacturing and product development buildings and, at the center of the campus, a five-story administration building.



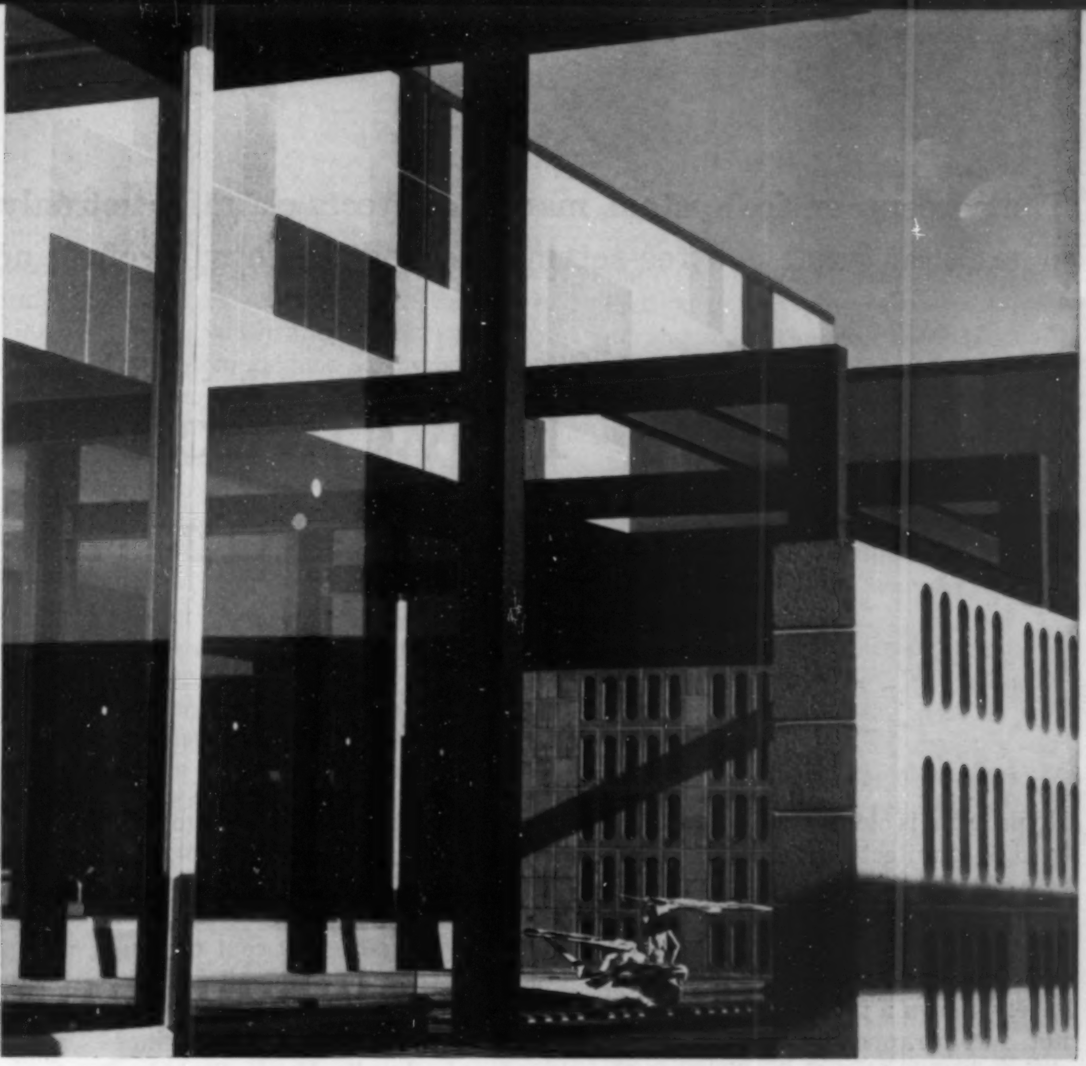
PHOTOS: (ABOVE & TOP OPP. P.) PIRKLE JONES; (OTHERS) ERNEST BRAUN

Aluminum reeds by Sculptor Keith Monroe move with the wind, generating a simultaneous rippling of the surface of the pool. Capping the glass-walled corridor of the education building is Painter Charles Mattox's ceramic mural.

Sun-filled cafeteria provides a pleasant spot for noontime relaxation. It now feeds 1,000 daily, will be big enough to serve the expanded future population of the campus.

White collar factory: manufacturing space, now used to assemble "Ramac," an electronic data storage unit used in accounting and computing systems, is "multiuse" space. It could be converted—or expanded—for production of any IBM product.

ARCHITECT: *John S. Bolles.* LANDSCAPE ARCHITECT: *Douglas Baylis.* ENGINEERS: *Chin & Hensolt (structural), Eagleson Engineers, Keller & Gannon (mechanical), Lyle E. Patton (electrical).* GENERAL CONTRACTORS: *Carl Swenson, Inc., Haas & Haynie.*



Classroom buildings face the open country, are separated from each other by landscaped courts. The buildings are used as a West Coast center for sales and service training and for company-sponsored employee education program.

Entrance court of the research building contains a small fountain by Sculptor Gurdon Woods. Fourteen West Coast artists, coordinated by Robert Holdeman (who designed the manufacturing building murals), were employed to soften and scale down the look of the vast group of buildings.

END

The percentage fee system, many architects claim, is not only outdated but unfair. What they want is a fee-setting method which will reflect actual design costs.

How much should architects be paid?

BY FRANK FOGARTY

No problem is older or more personal to U.S. architects than that of their fees. America has always tended to underpay its artists and, from the Jeffersonian days of Benjamin Henry Latrobe, architects have rarely known a time when they have not felt strapped and openly dissatisfied with what their clients paid them. The present generation is no exception, but in the last few years a new, and perhaps portentous, dimension has been added to the architect's usual discontent with his fees. Increasingly, the idea has spread that the trouble with architects' incomes is not just the client's tightness but the fee system itself, that venerable structure which for more than a century has made a percentage of construction cost the standard method of figuring an architect's hire.

Percentage fees, a vocal minority of architects now contend, are inequitable and they should be replaced with some system which would reflect actual design costs. What this system should be, how it could be made effective, and whether a change would really be wise is not yet clear. But it is evident that a sizable amount of sentiment for doing *something* has built up and that this is forcing the architectural profession to look more seriously at its fee structure than it has in years.

Consider, for a moment, this sampling of opinion:

▸ "The percentage fee system should be dropped. The fee should be based on the value of service rendered without reference to the cost of the project."—Philip Will Jr., Perkins & Will.

▸ "The architect is a darned fool to take work on a per cent of construction cost. If he works longer and harder and reduces the cost of a building, he winds up a loser since his fee is less."—Hugh Stubbins, Hugh Stubbins & Associates, Inc.

▸ "The percentage fee system is ridiculous. It simply does not insure what supposedly is its purpose, namely that a fair share of the dollars spent by the client will stay in the architect's pocket."—Ralph Walker, Voorhees, Walker, Smith & Smith.

▸ "Our office has abandoned percentage fee contracts for private work. We do not believe that a fixed ratio exists between architectural costs and building costs or that one should strive for a definite relationship between the two."—Victor Gruen, Victor Gruen Associates.

▸ "The entire profession must strive to eliminate the present standard practice of establishing architectural fees on a percentage of resulting construction costs."—Chicago Chapter, The American Institute of Architects.

These opinions are, of course, highly unconventional. Most architects not only disagree that the percentage fee is all bad, but feel that any attempt to shove it aside is both unwarranted and plainly unrealistic. The percentage fee, they point out, has been formalized in more than 100 fee schedules compiled by the various AIA chapters since the 1920's; perhaps most important, it has become thoroughly entrenched in the minds of both public and private clients as the way of doing business with an architect. Further, it has served the profession honorably and with a certain democracy, for under its covering umbrella all architects have been assumed to be equal and worthy of the same hire (this, of course, is also one of the criticisms of the system: that it has protected the inefficient).

But while it may be hard to envision a general rebellion against the percentage fee, it is impossible to dismiss the fact that one may erupt. Architectural fees are unquestionably too low for certain kinds of work. Architects today often get less than the 5- to 6-percent commission a real estate broker gets for merely selling a building. Yet the architect is expected to understand what a client wants in a structure; to take this idea, and, through art and engineering skill, give it form and substance in plans, elevations, sections, and details; to specify the nature and quality of every item going into the building; to help choose the contractor who will build it and to inspect the work as it goes along; and to do all this within the complicated framework of building codes, local ordinances, and government regulations. This is costly service, involving the salaries of many specialists. Present fees often cover these costs with only a modest amount left over for profit.

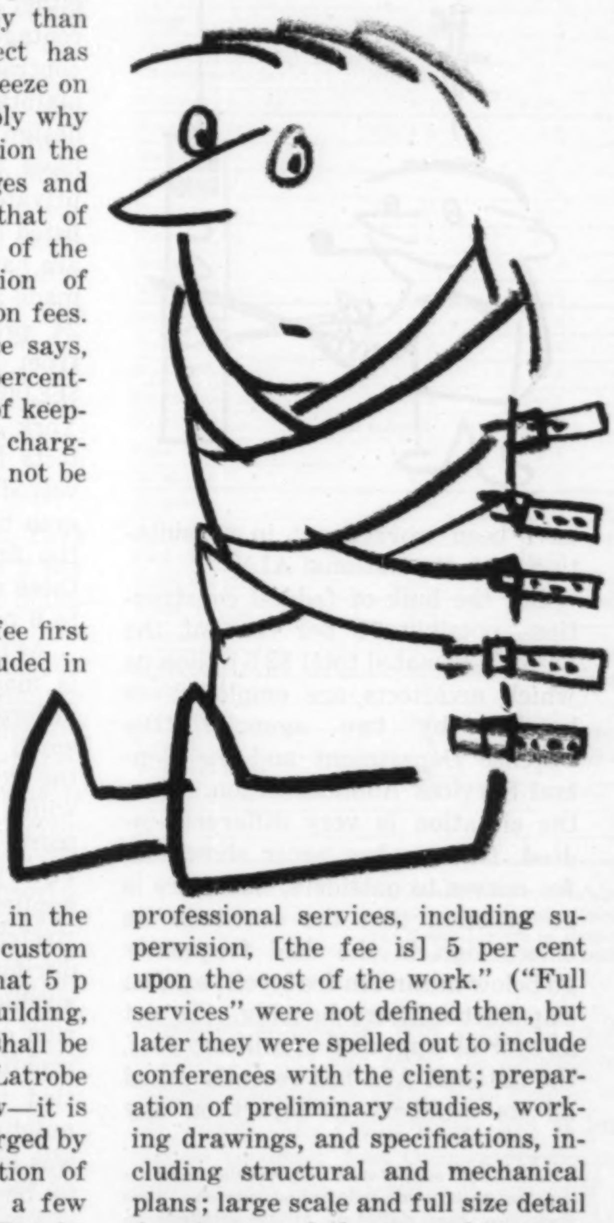
Consider the available figures on architects' net incomes. Of the individual practitioners who are members of the AIA, nearly half had annual net incomes of less than $10,000 in 1950 and about 20 per cent earned less than $6,000. Some architects, of course, command better-than-average fees for their work—Frank Lloyd Wright, for instance, who gets 10 per cent of construction cost for his jobs. But it is the rare architect who can count on netting more than $50,000 a year before taxes.

Whether the percentage system is to blame for all this may be debatable, but there is no question that it is a contributory factor. Percentage fees, based on construction costs, do not reflect the architect's actual design costs, and lately these design and engineering expenses have moved up more quickly than building costs. The architect has felt a steadily tightening squeeze on his profits, and this is probably why so many have come to question the wisdom of percentage charges and to take a stand similar to that of Harry M. Prince, president of the New York State Association of Architects and an authority on fees. "The time has come," Prince says, "to take a hard look at the percentage fee and to see if instead of keeping it the standard method of charging, other alternatives might not be better."

The age of per cent

Just when the percentage fee first came into common use is clouded in history. But certainly it was firmly settled in England and on the continent long before it was imported to the U.S. toward the close of the eighteenth century. Benjamin Latrobe, who founded the architectural profession in the U.S., wrote in 1806 that "the custom of all Europe has decided that 5 p Cent [sic] on the cost of a building, with all expenses incurred, shall be the pay of the Architect." Latrobe thought this level far too low—it is no more, he said, than "is charged by a Merchant for the transaction of business, expedited often in a few minutes by . . . a Clerk." But he seemed to have had no quarrel with the system itself, or at least not enough to buck it, for he and other early architects generally quoted their fees in per cent. (Rarely, of course, where they able to get anything even as good as the 5 per cent they complained about; Nathaniel Hawthorne cites one classic case of an architect who got only $400 for designing a granite house that cost more than $90,000).

By the time the AIA was set up in 1857, the percentage system was so thoroughly accepted that to fail to recognize it would have been almost as hard as denying the Gregorian calendar. Thus, in 1866, when the Institute printed its first proclamation on what it considered "proper" fees for the profession, it started with a statement that "for full professional services, including supervision, [the fee is] 5 per cent upon the cost of the work." ("Full services" were not defined then, but later they were spelled out to include conferences with the client; preparation of preliminary studies, working drawings, and specifications, including structural and mechanical plans; large scale and full size detail drawings; and the general overseeing of construction—in short, all the important design steps required to make a building a reality.) In 1915, the AIA approved, as an "alternate" method of charging, a fee-plus-cost arrangement (i.e., the client pays all direct expenses incurred by the architect in the work, plus a fee to cover overhead and profit). But until then the percentage fee, first at 5 per cent, later at a recommended 6 per cent, remained not only the accepted way of paying for design service, but the only way sanctioned by the profession.



Today, of course, the percentage fee has lost much of its exclusive status. But though the AIA at the national level has now dropped all mention of a recommended percentage fee (the move reflects both a respect for the anti-trust laws and the tendency of the local chapters to decide their own charges anyway), the percentage system is still referred to as the "standard" method in the AIA's *Handbook of Architectural Practice.* And it is still used on probably 75 to 80 per cent of all the design jobs handled by independent architects (the remainder would be divided mainly between lump-sum contracts and one or another of the many variants of cost-plus).

Free-style event

Just how the per-cent system works—what rates are recommended, what rates are actually charged—varies widely today. The AIA has 126 state and area chapters in the continental U.S., and of these more than 100 have some sort of schedule of minimum fees. To be sure, not all these schedules are different. Many chapters recommend exactly the same percentages for the various kinds of architectural work. Thus chapters in 14 states suggest a basic 6-per-cent fee for hospitals and churches; in eight states they propose 5 per cent for garages and warehouses, and in ten states 8 per cent for residences. The practice of the bigger chapters is to state these recommended fees on a sliding scale (i.e., an office building worth less than $50,000 commands perhaps an 8-per-cent fee, while a larger one worth $5 million brings only 4½ per cent, on the grounds that there is a great deal more repetitive design involved in the drawings).

As the table on page 111 shows, minimum fees differ considerably from one region to another (and sometimes within the same state). Partly, this is due to differences in building costs, but it also reflects the degree of industrialization of a particular area, its regional income, and local custom. In Alabama, the minimum fee for a house is still 6 per cent, while in New Jersey and California it is 10 per cent. In heavily industrialized Pennsylvania, the minimum for a small factory is 9¼ per cent, but in South Dakota it is only 6.

What makes the fee structure so hazardous to assess is the fact that between the minimum recommended fee and the fee the architect actually collects there is often as great a difference as there is between the schedules of one region and another. One term for this is fee-cutting; another, more polite, is competition. However labeled, its primary causes are that many clients are basically bargain hunters, and that architectural costs do differ from office to office, depending on both overhead and the quality of design work.

Because there are always some architects who are willing or forced to let the next man educate the client to the size of a fair fee, minimum schedules have a tendency to lose reality and to become not minimums at all, but in effect maximums. In Detroit, for instance, one survey of AIA members showed that of 33 firms, only one was charging as much as the 7-per-cent fee recommended for school work, and 14 were doing schools for less than 6 per cent. This deviation did not apply across the board. On other types of work where there was presumably less client pressure, fees charged were much closer to the recommended levels. But of the 46 firms that answered the fee question, only one said it followed the minimum schedule throughout.

Just how little the AIA schedules of recommended fees can mean in practice shows clearly when one looks at what clients are willing to pay architects today:

The federal government, judged by minimum fee standards, pays both well and poorly depending on which federal agency is involved. Good or bad, the fees are fixed, and as Chicago Architect Charles H. Dornbusch points out, "take it or leave it—you can't argue."*

Though most federal work is lump-sum (i.e., the architect agrees to a fixed dollar fee at the start), the fees paid are based on percentage-of-construction-cost schedules. In the case of the Public Housing Administration, the Department of the Interior, the Atomic Energy Commission, and the State Department, these schedules are generally in line with AIA recommendations. Some have been worked out in consultation with the national AIA.

BUIL-DING
COST

But the bulk of federal construction—possibly 75 per cent of the annual estimated total $2.5 billion on which architects are employed—is handled by two agencies, the Defense Department and the General Services Administration. Here the situation is very different, indeed. Defense has never shown its fee curves to outsiders, but there is no question that the contracts its offices sign in the field frequently go below minimum fee levels, e.g., on Capehart military housing. (To get an over-all appraisal of military fees, the national AIA has recently asked all its members to report on any work they have done for Defense in the last few years.) GSA, which contracts for post offices, federal office buildings, and public health hospitals, relies on confidential "experience" tables, but it does say that it has a ceiling of 6 per cent and an "effective" floor of 3¼, not including supervision of construction. This puts it on the low side of most minimums, but not alarmingly so.

State and local governments seldom pay better than the AIA-recommended minimum fees, and frequently not so well. Of 40 states answering an AIA survey in 1956, 18 said they followed the local recommended minimums in paying architects, another 12 used their own schedules, and the remainder either paid flat fees based on percentages of cost or negotiated their contracts. (While eight states still maintain architectural bureaus to design public buildings, all of them have to farm out some work to private architects.) Just how tight-fisted some of these state schedules are has been shown by one analysis made in New York in 1956. Out of 24 projects which varied in size from a $12 million hospital to a $68,000 poultry house, the New York State Association of Architects found that the architects involved lost money on 11 of the jobs, even before counting in salaries for the firm's principals. (The fees in these cases ranged from 3 per cent to 6 per cent.)

At the municipal level, the pattern is more mixed, but not essentially different. Fees are frequently too small to return a profit to any but the low-overhead firms or those which make no attempt to turn out more than a routine, stock plan. (One particular problem, which also applies to state work: jobs often stretch out over two to three years during which time there may be sizable increases both in construction costs and design costs; yet the architect's fee frequently remains tied to the estimated cost of the building at the time his contract was let.) And even where fees tend to be adequate, as they generally are in schools, there is almost constant pressure to bring them down, both at state and local levels.

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* Until 1950 most federal construction agencies supplied their own architectural services. Since then, they have shifted to private architects on practically everything but maintenance, minor repairs, and alterations.

"Schools are one area," says Los Angeles Architect Culver Heaton, "where people vote and can express themselves. The first thing a school board member will do, trying to make an impression on the voters, is to attack something he doesn't understand—the architect's fee." (Actually, architect's fees for designing schools have been shown to take less than ¾ of 1 per cent of the education appropriations of some states.)

Corporate and institutional clients generally pay architects well—at least minimum recommended fees, sometimes substantially more (for a prestige office building some big architectural firms charge 4 per cent which is good, indeed, considering construction costs may run upward of $50 million). In the design of factories, laboratories, stores, and nonspeculative office buildings, the architect probably has more room to negotiate a fee than in any other area of construction. This is a sector where cost-plus fees are fairly common, though usually they carry an upset price, i.e., a cost limit that cannot be exceeded. On the whole, institutional clients—hospitals, colleges, though not churches—tend to pay almost as well as the corporations.

Speculative builders, in New York for instance, pay fees of 1 to 3 per cent for office and apartment buildings. Most architects consider the low end of this scale so abysmally low, such an obvious invitation to hacking, that they make no attempt to get work on many of the cheap rental jobs. Somewhat the same is true of Title I urban renewal projects. Fees offered by the more speculative redevelopers, who unfortunately are in the majority, run from 1¾ per cent to a top of 2½ per cent, and most firms, with a fairly high overhead and a minimum stock of plans in their drawers, just are not interested.

Home-building clients fall into two distinct classes: 1) the mass developers who, if they hire architects at all, tend to price them down as

continued on page 174

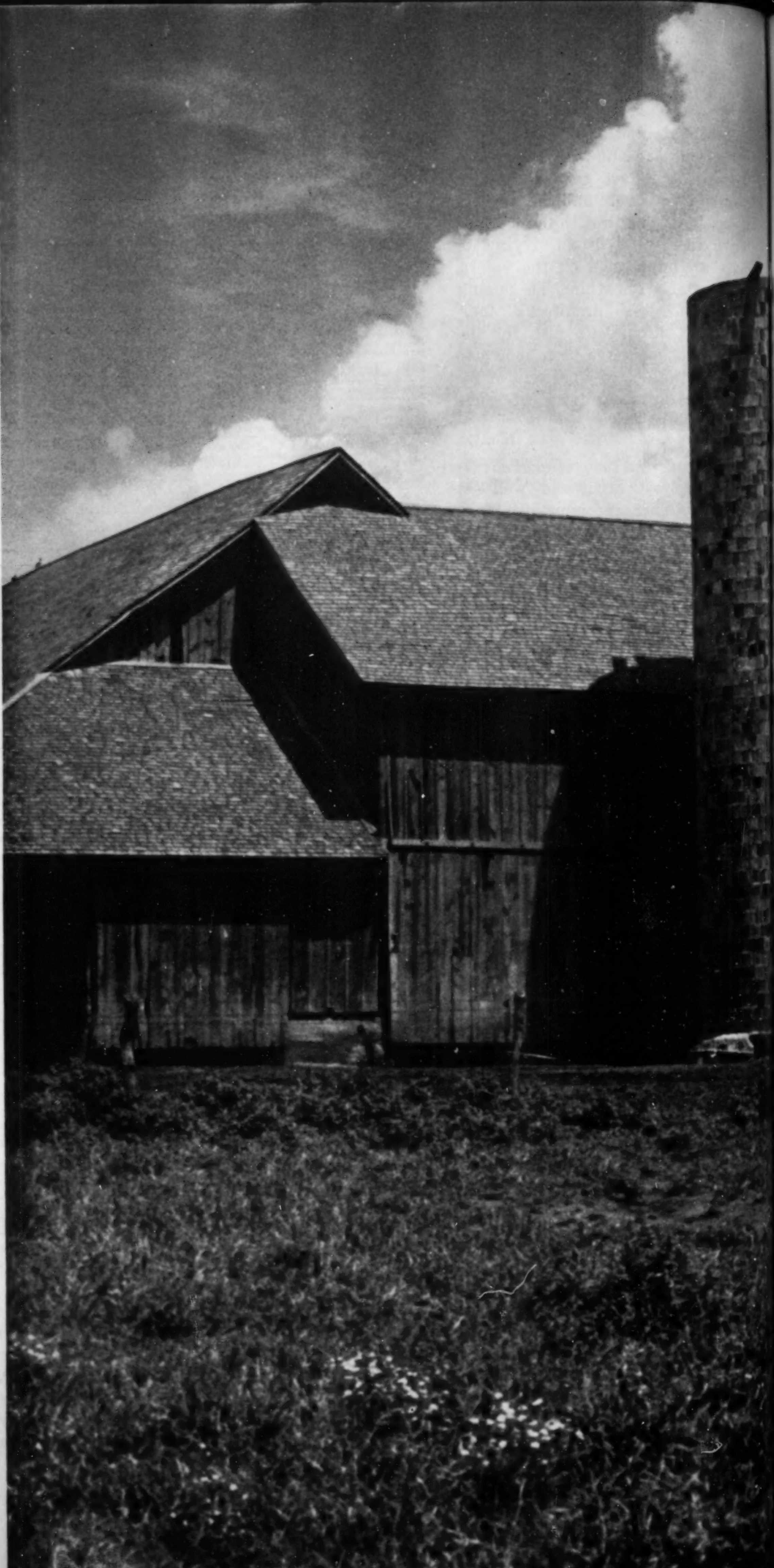
What U. S. architects consider proper fees

Figures for each state are the highest fee for a $50,000 building and the lowest fee for a $100,000 building recommended in minimum fee schedules of AIA chapters.

	Hotels, Office Bldgs, Apartments, Factories	Hospitals, Labs, Churches	Residences	Schools	Stores	Warehouses, Garages
Alabama	6%	7%	6%	6%	6%	5%
Arizona	6	6	9	6	6	6
Arkansas *(a)*	6	6	8	6	6	6
California	7	8	10	8	7	6
Colorado	6½–6	7½–7	9½–9	6½–6	6½–6	6¼–5
Connecticut	7–6	8–7	10–9	8–7	8–7	6–5
Delaware	no fee schedule					
District of Columbia	7¼–6	8¼–7	10–8¾	7¼–6	7¼–6	6½–4½
Florida *(a)*	6–4½	7–6	8–6	7–6	6–4½	6–4½
Georgia *(a)*	7–6½	8–7½	8–7½	7–6	7–6	6–5½
Idaho	6	6	8	6	6	6
Illinois *(a, b, c)*	15–5	10–6	15–8	8–6	10–5	10–6
Indiana	6–5½	6¾–6	8	6–5½	6–5½	5–4
Iowa	no fee schedule					
Kansas *(a, d)*	6	6	6	6	6	5
Kentucky *(a, c)*	6	6	6	6	6	6
Louisiana *(a, d)*	6	8–6	10–6	6	6	6
Maine	6–5	6	8	6	6	5
Maryland *(c)*	8–5½	9½–6	7–5½	7–5½	7–5½	5–3½
Massachusetts *(a)*	8½–7½	10–9	10–9	8½–7½	8½–7½	7–6
Michigan *(a, c, d)*	8–5	9–6¾	10	8–5¾	8–6	7–4¾
Minnesota *(a)*	6½–5½	7–6	8	7–6	6–5½	5½–4½
Mississippi	6	6	8	6	6	5
Missouri *(a)*	7–6	8–6½	8–6½	7–6	7–6	6–5
Montana	7½–4½	8–5	8–5	7½–4½	7½–4½	6½–3½
Nebraska *(c)*	6–5	6–5	7–6	6–5	6–5	6–5
Nevada	6	6	6	6	6	6
New Hampshire	6	6	8	6	6	5
New Jersey	7	8	10	7	7	6
New Mexico	6	6	6–8	6	6	6
New York *(a, d)*	8–4½	12–5	12–6½	8–5	8½–4½	7–4
North Carolina	6½–5	6½–5	15–7	6–5	6½–5½	5½–4½
North Dakota	no fee schedule					
Ohio	7–6	8–6	8	7–6	7–6	6–5
Oklahoma	6½	7	8	6½	6½	6
Oregon	7–6	8–7	10	7½–6½	7-6	6-5¼
Pennsylvania *(a)*	9¼–5¼	9¼–5¼	9¾–5¼	9¼–5¼	9¼–5¼	7¼–4½
Rhode Island	7½–6	7½–7	9½–9	6½–6	6½–6	5½–5
South Carolina	6–5½	6–5½	6	6–5½	6–5½	5–4½
South Dakota	6–5	6–5	8–7	6–5	6–5	5–4
Tennessee	8–5½	8½–6	8	6–4	8–4	6–4
Texas *(a)*	7–6	7–6	10–8	6	7–6	6
Utah	6	6	10–6	6	6	6
Vermont	7½–6	7½–7	8	6	7½–7	5½–5
Virginia	6	7	10–8	6	6	5
Washington *(a)*	7–6	8–6	10–8	7–6	7–6	6
West Virginia	6	6	7	6	6	5
Wisconsin	6	7	8	6	6	5
Wyoming	6	6	15–7	6	6	6

(a) Range includes schedules of more than one AIA chapter.
(b) Does not include Chicago Chapter which now has no percentage schedule.
(c) Some chapters in state in process of revising schedules.
(d) Fee schedule starts with buildings costing $100,000 or more.

Minimum architects' fees suggested by AIA chapters vary considerably from state to state, but they still reflect the influence of the 6 per cent average fee which was the national standard for years. Some chapter schedules cover buildings costing as much as $20 million (e.g., Pennsylvania) and as little as $15,000, but in no case do chapters propose maximum fees. Common practice in schedules is to break down all types of buildings into four categories of complexity and apply, say, a 5-per-cent fee scale to the simplest group (garages, nonfireproof buildings) and, perhaps, a 10-per-cent level to the most difficult (a civic center, for instance, which might demand unusual design skill).



Is man being boxed in by machine-made architecture? Modern humanists think he is; this article, fourth in a series, tells what the humanist architects propose to do about it.

MODERN ARCHITECTURE IV

Architecture and the individual

BY PETER BLAKE

Most opponents and supporters of modern architecture will agree on at least one point: modern buildings tend to reflect, inside and out, the mechanization of building. The opponents think this is unfortunate; they would prefer to see less emphasis on "engineering" and more on what they might call "art." They often ask: "Why should all buildings look like factories?" Many supporters of modern architecture think, of course, that the new technology (curtain walls, exposed metal extrusions, etc.) looks just fine—and that it will produce as great an art form as any wood- or stone-building era of the past (if, indeed, it has not done so already).

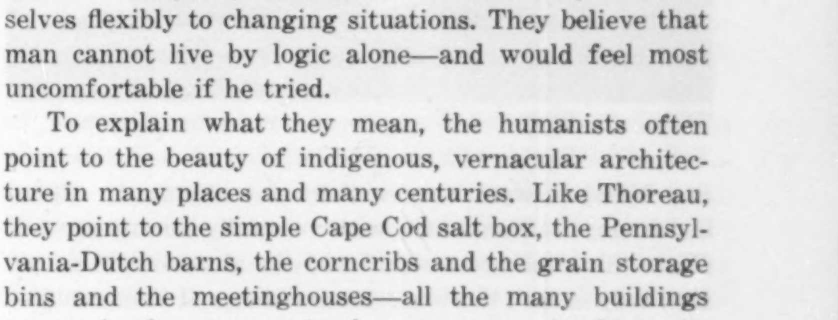
Somewhere between these two extremes stands a rather special group of modernists—the "humanists." The humanists have nothing against the new technology (just so long as it does not make a spectacle of itself). They have nothing against the basic premises of modern architecture—as a matter of fact, they can make a pretty good case for having established many of them in the first place. Their point is, simply, that most buildings are put up for use by human beings and that this plain fact should be reflected in the way all buildings look.

One way this might be achieved was suggested more than a hundred years ago by Thoreau: "The great number of windows, and their irregularity in size and position, here and elsewhere on Cape Cod, struck us agreeably," he wrote. It was, he continued, "as if each of the various occupants . . . had punched a hole where his necessities required it, and according to his size and stature, without regard to outside effect. There were windows for the grown folks, and windows for the children . . . a certain man had a large hole cut in his barn door for the cat, and another smaller one for the kitten . . . ."

At first glance, this sounds a little like the functionalist doctrine discussed in an earlier article in this FORUM series. And, to some degree, it is. But unlike the functionalists, who tended to make a *system* of design out of articulated plans and articulated structural forms, the humanists have shied away from intellectual systems altogether. In their place, they put a kind of intuitive, casual, occasionally makeshift attitude to building which has about it a curiously attractive and human quality. Where the functionalists operate under a strict, rational discipline, the humanists tend to adjust themselves flexibly to changing situations. They believe that man cannot live by logic alone—and would feel most uncomfortable if he tried.

To explain what they mean, the humanists often point to the beauty of indigenous, vernacular architecture in many places and many centuries. Like Thoreau, they point to the simple Cape Cod salt box, the Pennsylvania-Dutch barns, the corncribs and the grain storage bins and the meetinghouses—all the many buildings put up in the past as simple answers to simple needs,

PHOTOS: (BELOW) ROGER STURTEVANT; (OPP. P.) ANDREAS FEININGER—LIFE



Traditional Iowa barn (left) is a picturesque jumble of intersecting roofs, put together quite naïvely by some anonymous builder. John Yeon's Oregon house (right) is a play with very similar forms—but chosen and composed with the greatest care and discrimination.

Both Harry Weese's house in Illinois (right) and Alvar Aalto's dormitories for MIT (below) are unmistakably modern; yet both have traditional and humanist touches—e.g., natural materials, irregular fenestration and, at MIT, nongeometric forms.

PHOTOS: © EZRA STOLLER

and found to work very well by any standards. These buildings, the humanists will cheerfully admit, are not Great Architecture in the traditional academic sense. But, they insist, these are the buildings of democracy—"the buildings of the people." The men who built them were not trained to plan ahead logically, or to meet certain esthetic standards; they just built what they needed, and added to it if and when they had to. So some of these "vernacular" buildings are full of intensely human and delightful little "accidents"—an unforeseen lean-to here, an odd little window there stuck, off center, into a blank stone wall, a picturesque twist in the roof or a kink in the plan. These "accidents" in vernacular building were never premeditated, of course—all they represent is improvisation on the spot to solve some problem arising from human use.

No humanist claims that all vernacular architecture is a gold mine of such details and forms; plenty of it is unimaginative, pretentious, or simply shoddy. (Much of today's vernacular architecture in America, it would seem, is slapped together with corrugated tin and brick-patterned asphalt paper.) But some of it, in the past and in every country of the world, has had a lasting value—at least to those architects who possess that most important organ of the true artist, the selective eye.

For the important difference between a humanist architect such as Finland's Alvar Aalto and, say, the builder of a salt box, is that Aalto, like great artists everywhere, possesses a highly trained, highly sensitive eye, whereas the Cape Cod carpenter possessed mostly luck. Aalto and his opposites in every country are anything but naïve. The casual look of their buildings, the picturesque "accidents" in detail and over-all form, are shrewdly calculated effects—as shrewdly calculated as any detail found in precision-architecture.

The selective eye at work

What have the selectors selected? Some of them, as suggested above, have stuck to vernacular sources—especially the sources close to home. In New England, those sources are the old clapboard and shingle houses with their puritan simplicity; in Pennsylvania, they are the vigorous stone and oak barns that continue to defy the ravages of time, weather and hexes; in the Scandinavian countries, there are similar sources in local, vernacular wood building; and in Latin countries there are the mud and stucco houses, the tile grilles for sun control, the walled-in patios for outdoor living in privacy.

So the first source of humanism has generally been the architecture of the region. But the world, as just about everyone has said, is shrinking; and so the humanists have also gone to a second set of sources, many of them far beyond the narrow confines of their own region or country. The humanists on America's West Coast, for example, drew upon Japanese building as well as Swiss architecture; and the teahouse and the chalet became a new kind of California bungalow in the hands of the Greene Brothers, who helped start the "California Style" around the turn of the century. It happens that this bungalow made a great deal of sense in terms of California's varied climate; indeed, all humanist architecture "makes sense" in practical terms. But the sources were far removed from the West Coast; only the local redwood tree, with its extraordinary abilities of self-preservation, produced a truly local or regional resource.

ROGER STURTEVANT

DELANO STUDIOS

The "California Style" is the best developed humanist expression in the U.S. Ernest Kump's school (top) and Pietro Belluschi's house in the Northwest (below) demonstrate the special care and talent with which humanists handle the siting of their buildings.

This brings up a third resource of humanist architecture: the resource of natural materials, naturally finished (or left unfinished altogether). This is again, in part, a practical development; men like Aalto, who know a great deal about wood in building, were sure that many woods should be left unfinished. But there is a philosophical reason, too, for the humanists' love for natural materials: it is that they feel that technology should not be allowed to come between man and his natural habitat except where absolutely necessary.

The sources of humanism, in short, are varied in nature and varied in national origin. They were rich in inspiration. Just as the machine and *its* forms produced a complete, functionalist vocabulary that had little to do with the objects that first inspired it, so the forms of vernacular building—both regional and worldwide—and the materials found in nature inspired the humanists.

And as in functionalism, the original inspiration was soon adapted to entirely different building types. For example, the basic composition of a beautiful Mennonite barn in Pennsylvania—stone piers, sometimes stone end walls, cantilevered upper floors framed in oak—might reappear in a "humanist" house or school; the handsomely tapered form of a wooden corncrib or a windmill might reappear in a "humanist" country church; and the rounded stucco forms of fishermen's houses on an Island of the Aegean Sea might reappear in Le Corbusier's chapel at Ronchamp. (Le Corbusier's work, in its most recent manifestations, is as much influenced by humanist sources as his early work was influenced by the machine.)

So the original inspiration from a source and the final application to a specific building seem to be quite unrelated in any logical way. The essential link is the imaginative architect. Alvar Aalto, in one of his rare speeches, has said that "one could compare architecture to the full-grown salmon. It is not born full grown, it is not even born in the sea where it swims, but far off, where the rivers narrow and divide into tributaries and mountain streams. . . . It is like the first stimuli of architecture which arise . . . far from practicality . . . for example, I have found that a little playful experiment in forms that I once carried out and that was apparently trivial, gave me—ten or more years later—the key to a series of shapes that were architecturally practical."

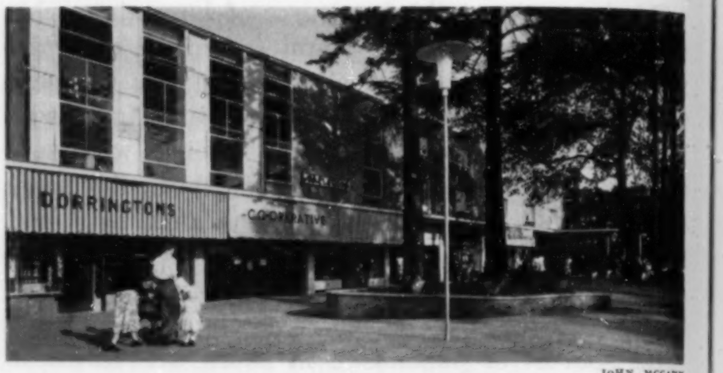
This is the long and devious route from source to finished building. It has no short cuts. But neither is it quite as planless as Aalto may have made it seem. For the humanists, in their seemingly disorganized way, have evolved systems of their own as well. These systems are perhaps more subtle than those of the more logical disciplines, for to the outsider they seem to be quite unsystematic. Nonetheless, they *are* systems of design of a fascinating sort.

With makeshift aforethought

However casual, however "accidental" a humanist building may look in part or whole, the chances are that it was designed with the most calculated premeditation.

The humanist argument runs about like this: People are completely unpredictable, and what they will do with their buildings is unpredictable also. The objective of humanist architecture must therefore be to make provision for the vagaries of human occupancy. But unlike simplifiers like Mies van der Rohe (who, as FORUM pointed out last month, tries to provide for such unpredictability by creating large, universal, and flexible spaces), the humanists believe in providing a certain amount of picturesque, built-in chaos, to help absorb future growth—both wild and tame. Vernon DeMars, one of the architects of the colorful Easter Hill housing development outside San Francisco (and, incidentally, a man who was once a "simplifier" himself), has said: "Here at Easter Hill we attempted to introduce a certain kind of chaos from the very beginning so that almost anything that people would do from then on couldn't hurt it any further." He and other humanists feel that some modern architecture is just too orderly in appearance—that people just do not live that way except, perhaps, on Sundays in Philadelphia; so that each little bit of human self-expression—a flower box, or laundry on a pole, or a striped awning—clashes vio-

ROGER STURTEVANT



JOHN MCCANN

"Built-in chaos" at Easter Hill, near San Francisco (top) and at Harlow, in England (below), invites imaginative self-expression instead of rejecting it as some formal architecture does. Humanists think this approach permits much more flexible use.

lently and disastrously with the architect's carefully composed intent. By building-in chaos (or, at least, informality) the humanists try to create an over-all effect of picturesque clutter that can absorb more of the same in the years to come.

But the humanists do not feel they are just bowing to the inevitable by making their architecture informal. They feel strongly that the middle-class democracy born in the nineteenth century must create an architecture quite different in spirit from that of previous, aristocratic societies.

To the humanists, architecture in a democracy should communicate with *every* man. They see little point in monuments and tend to feel that monuments should be replaced by community centers. They see no true validity in architecture for the sake of architecture—or in architecture as man's way of trying to be Godlike; to them, architecture is for the real life on earth, with real problems and real people trying to solve those problems.

Because the humanists have drawn so heavily upon vernacular building, the best examples of modern, humanist architecture tend to be small in scale. They are found in houses, garden apartments, community facilities like schools and churches. Yet one of the most urgent problems of our times seems to be the mass production of large, industrialized, horizontal and vertical slabs—assembly-line factories and tall office and apartment towers. What is the humanist solution for these?

Humanism and mass production

The answer, at present, is that the humanists do not have a solution which fits *today's* mass-production methods. Their first reaction to the mammoth building is that they wish it would go away. But since, apparently, it will not, the humanists have been forced to go to other disciplines in designing their office towers and factories. Still, there are some indications that a humanist solution for the big building—the big, industrialized building—is not far off.

Aalto tells the story of a visiting Indian architect who asked him: "Mr. Aalto, what is the module of this office?" And the answer, Aalto recalls, was: "One millimeter or less."

Now, this is a charming story, but it would make most of today's builders shudder. To the man dedicated to the proposition of modular building *with identical units,* Aalto's answer is at best an evasion of the issues. The only way toward more efficient building, surely, is the mass production of building components. If our "catalogue-technology" is any indication, then the buildings of the future, in every country, will be standardized, modular, mass produced and—within a narrow range—uniform. This, in turn, makes the humanists blanch. As Architect Robert Woods Kennedy put it a few years ago, the humanists "are apt to be commonsensical, antirule, antistyle, antidogmatic, careless of techniques." (Kennedy, by and large, is on their side.) The mass producer of buildings will seriously question whether anybody who is to solve our gigantic building problems can truly be called "common-sensical" and also "careless of techniques."

Yet it is here, precisely, that the humanists may make a major contribution in the near future.

It is as obvious to them as it is to their critics that something will have to give in this stalemate between technology and the individual. The humanists believe that *technology* will have to give—that modular geometry may be fine for the machine, but that the end of architecture is the sheltering of human beings, not the satisfaction of some drill press. Hence, the humanists say, the machine will have to adjust to man, not man to the machine.

As a matter of fact, they say, the machine is not nearly so mechanistic as its apostles would like to have us believe. There is a real kind of "machine-craft," the humanists believe, and they point to two aspects of machine production sometimes overlooked: first, the fact that machines are not infallible and often turn out a great many "imperfect" products. (Some of the tinted glass in Manhattan's new Seagram Building, for example, had to be rejected because the color was a few shades off; a humanist architect, of course, would have been delighted with such variation.) And, secondly, the humanists point out that many machines can now be controlled easily so that their output can be varied in color, finish, even shape and size.

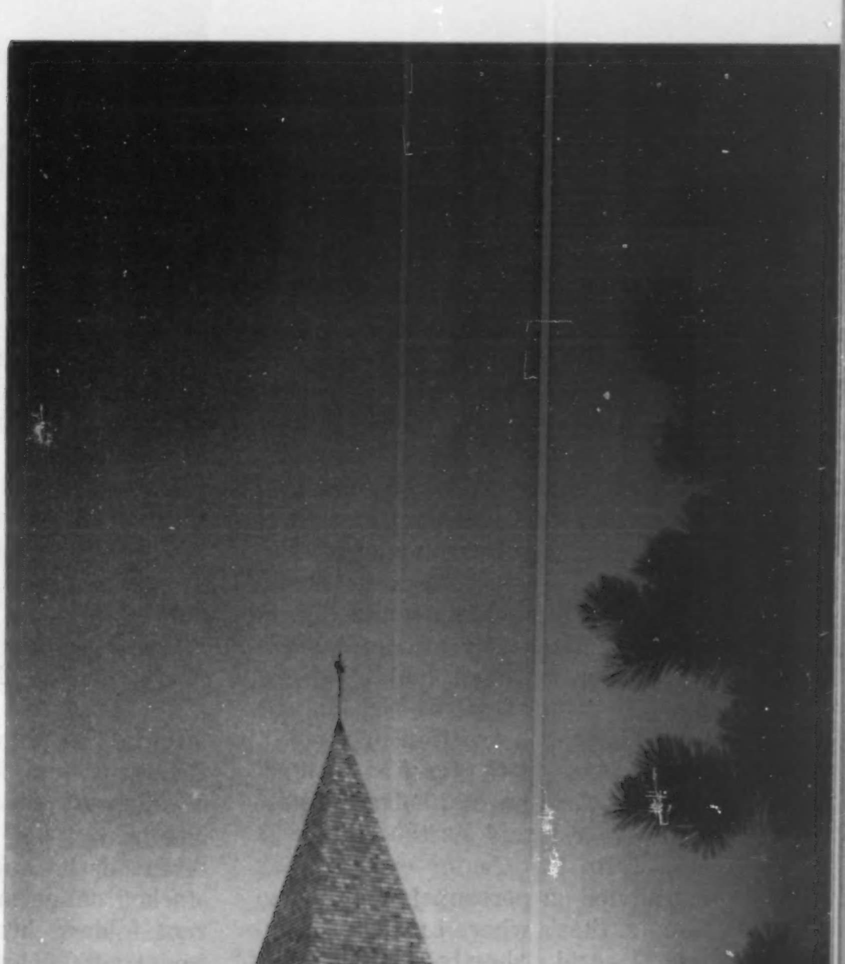
In short, it may soon be possible to build-in variety by efficient, mass-production means rather than rely upon unpredictable man to provide such variety through his use of the building. FORUM touched upon the problem 1½ years ago in "The Machine-made Parthenon"; it was pointed out then that the beauty of the Parthenon depended very largely upon its subtle, dimensional variations, and that when the insensitive Romans tried to copy the Parthenon, they missed that point and turned out some remarkably dull imitations. It might well be possible, FORUM suggested, to create a kind of "varied module" that would take the curse off today's monotonous one-one-one patterns along city streets and country highways.

Few humanists have yet had a chance to experiment with these possibilities. Instead, oddly enough, members of some of the other schools of modern architecture have been the first to try to "humanize" the big building by using the humanists' approach. Both Le Corbusier and Gropius—whose work is generally associated with "functionalism"—have built-in color and texture "accidents" in recent tall structures, and Le Corbusier's High Court Building at Chandigarh violates the one-one-one module in most respects. Marcel Breuer has long used humanist touches to soften the machine-geometry of his buildings: at UNESCO, in Paris, the curved façades with different kinds of sun-control devices depending upon the orientation seem to be another attempt at breaking down the one-one-one rhythm.

These, however, are just the first beginnings of a new humanism in large, industrialized structures. More is sure to come—and there are sure to be setbacks also; for, unquestionably, it will continue to be easier for a while to build by rote rather than by discriminating choice.

Meanwhile, the humanists have reasserted an ideal which has dominated discussion in every other field of human endeavor in this century: in the arts, in most sciences, in politics. That ideal of individual expression and individual freedom in an age perhaps excessively intrigued by the one-one-one pattern of conformity was worth raising in architecture also. Regardless of the impact their case will have, it is to the great credit of the humanists that they are making that case in our day. END

Village chapel on Cape Cod (see also page 134) was designed by Finnish-born Architect Olav Hammarstrom. Its form recalls both Scandinavian and American vernacular buildings (e.g., windmills). Its natural wood finish is in the Cape tradition. In scale and composition, this is an excellent example of modern humanism.



JOSEPH W. MOLITOR

West Pointer Otto Nelson is not only New York Life's influential vice president for building; he is also a highly skilled—and successful—strategist in the battle for urban renewal.

Building's two-star general

BY RUSSELL BOURNE

Last month the Defense Department announced with appropriate fanfare that a certain General Nelson of New York would become special assistant to Secretary McElroy to speed the Eisenhower-inspired reorganization of the Pentagon. Remarked Nelson: "Lord only knows how soon I'll get the perfumed dagger and hatchet treatment." Some weeks earlier word had gone out that the same General Nelson was supervising construction of the $75 million Lincoln Center for the Performing Arts on Manhattan's West Side. Nelson said at the time: "A man from the Center came to ask my advice on personnel; I talked to him . . . that's where I made my mistake!" And, shortly before that, news had come from the New York Life Insurance Co. that the final building phase at Lake Meadows, its huge housing development on Chicago's slum-ridden South Side, was beginning—bossed by New York Life Vice President, Major General Otto Nelson. A year of challenges was under way for a remarkably modest, humorous West Pointer ('24) who was fully capable of organizing all this into a workable schedule without losing either his modesty or his sense of humor.

New York Life's interest in housing after the war was not an isolated phenomenon; the amount of money invested in real estate by the big four of the life insurance business—Equitable, Metropolitan, New York Life, and Prudential—has almost quadrupled within the past ten years to a 1957 total of $1.4 billion. As FORUM pointed out in 1955 when the housing boom was on: "Seldom have the few had so much power to influence the shape of America's architecture."

General Nelson, who exercises his share of that power with great discretion, begins his day in a rather unusual way: he rises at 6 A.M. to feed his herd of 70 Aberdeen Angus cattle at his farm on R.F.D. 2, outside Princeton, New Jersey. Then, after breakfast with his wife, Mildred, he drives the 5 miles to Princeton Junction station, is in his Manhattan office by nine. As he sits behind his broad, rather cluttered desk and beside a table stacked dangerously high with current folders, he looks like a short, jovial version of the American Indian on the nickel—ruddy, with a high forehead, large nose, wrinkles at the eyes.

Born in Omaha in 1902, he was raised in a home that was Lutheran, Swedish, industrious. And he has never abandoned a certain Midwest broadness of speech. But since leaving the Nebraska plains and West Point, he has logged in a good deal of learning, including an M.A. in economics from Columbia and a Ph.D. in political economy from Harvard. Before the war ended, Nelson's outstanding record (major to major general in three years) and extracurricular honors brought him to the attention of George L. Harrison, who was on temporary leave from the presidency of New York Life to be special assistant to the late Henry Stimson, then Secretary of War. Nelson packed away his two stars and reported to New York Life in March 1946 as Assistant Secretary.

One year after joining New York Life, Vice President Otto Nelson became a very real and powerful force in the building industry as custodian of his company's impressive reservoir of housing dollars. Walking about the sites with the posture of a hurried pigeon, delegating authority with the confidence of a man who knows he can trust other men, Nelson soon proved his worth by his limitless energy and a nice eye for housekeeping detail. ("But I'm not a nit-picker!") At the same time he was building up a staff that was both individually expert and adjusted as a group to the General's headlong approach.

He also revealed himself to be surprisingly sensitive in reconciling the interests of his company with the difficult desires of some of the company's 20,000 tenants.

Boss of Lake Meadows

There have, indeed, been many unusual difficulties at New York Life's most recent project, Lake Meadows.

Ferd Kramer, Chicago consultant to the Housing Department of New York Life, confessed in 1953: "If New York Life had known in 1948 what they know today, Chicago wouldn't have had a chance to get that project." Although Nelson's and the company's experience in housing had been extensive by then, they were not at all prepared for the political and cultural hornet's nest that they were treading on. Their previous developments had

LENI ISELIN

broken up no neighborhood patterns—Fresh Meadows (1949) had been built on a Long Island golf course; Manhattan House (1951) had taken over the site of an abandoned car barn. At Lake Meadows, immediately after contract signing, the defenders of the depressed, predominantly Negro neighborhood—aldermen, clergymen, small businessmen—rose up against New York Life in full fury. And to anyone with an ear as honest as Nelson's, it was clear that some justice lay on their side of the argument. To make matters even more difficult, construction costs were rising precipitously.

At this point the company was, however, committed, and it was Nelson's job to make the best of a sticky situation. His role as representative of the owner was subtly different from the part commonly played by a developer. Whereas the developer is his own front office, the weight of five million policy owners rests on Nelson's shoulders. For New York Life housing is as much a search for a tangible symbol of public service as it is a dollar investment. To build an unhappy neighborhood would be unwise economically, but it would be disastrous in terms of policy-owner relations.

Skidmore, Owings & Merrill Partner Fred Kraft describes the Nelson of those days as a "real stem-winder. He'd come out here from New York, usually attend two or three rough budget sessions in the morning, tour the site, spend time with us, and then check in with the mayor and all the agencies. Somehow he'd be able to squeeze in a luncheon speech to a neighborhood group too."

Although the project is not entirely built and it is too early to judge the results, it appears that a bold experiment in racial integration is working out; rumors that the arrangement is acceptable and even attractive to an increasing number of white tenants are spreading fast in race-tense Chicago. New York Life bought the land for Lake Meadows and built the project for a total investment of more than $20 million. The 2,000 apartments are renting well at an average $30 per room, giving the company an annual gross of about 6 per cent (one third of which is paid out for amortization).

The 4-per-cent net yield from this investment is about what New York Life hoped to make from its excursion into housing. Yield from all of the company's investments averaged out at about 3.6 per cent before taxes in 1957. But most of the company's other assets are in "silent investments" that not only entail less financial risk but also do not put the name of New York Life in jeopardy. "Housing is a gamble for us," Vice President Nelson affirms. "We don't quite know yet whether it's a gamble we've won or lost."

Wrestling at Lincoln Center

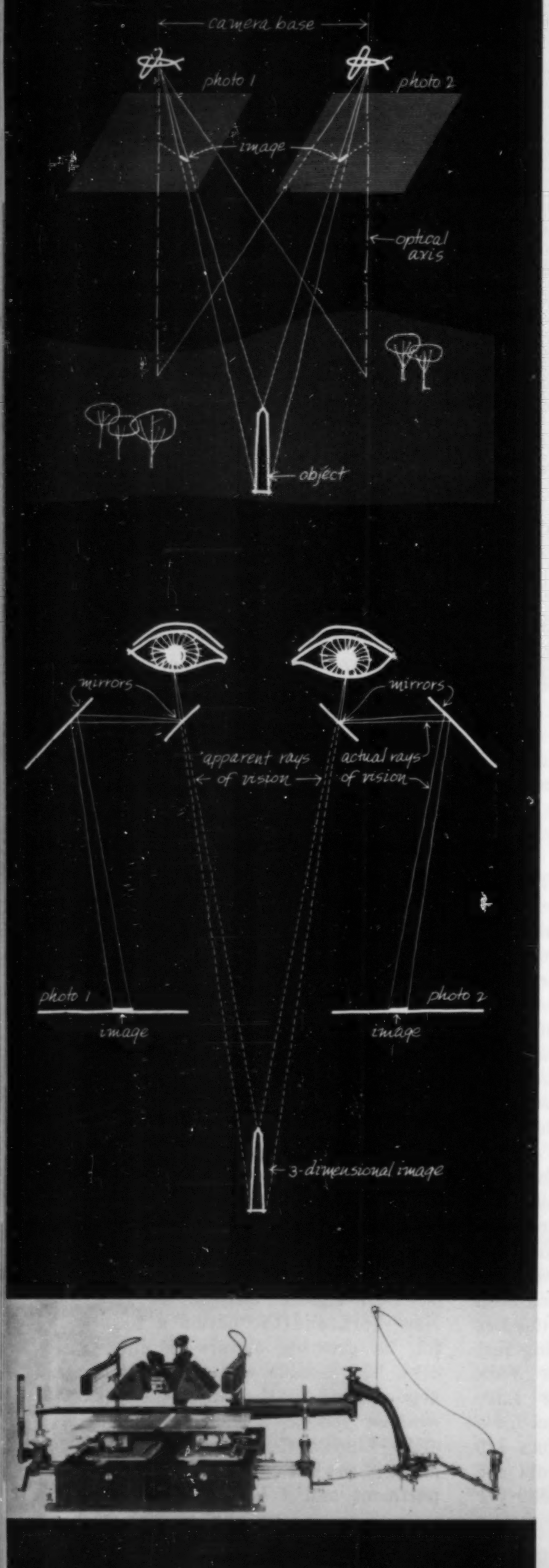
One day in November of 1956 when some of the organizational problems at Lake Meadows were beginning to seem soluble, Nelson was asked to give a bit of his attention to a project that had caught the interest of New York Life's board chairman, Devereux Josephs. It was the Lincoln Center for the Performing Arts, then a vague but nonetheless compelling idea of John D. Rockefeller 3rd, Josephs, and other farsighted citizens to give New York and the nation a focus for its growing culture-consciousness. The trouble was that details kept getting in the way (such as whether federal authorities would allow Lincoln Center as an urban renewal project). "The housing department and I began to get in-

continued on page 190

Technology

The science of photogrammetry is fast becoming an important tool for city planning, site selection—and architectural research.

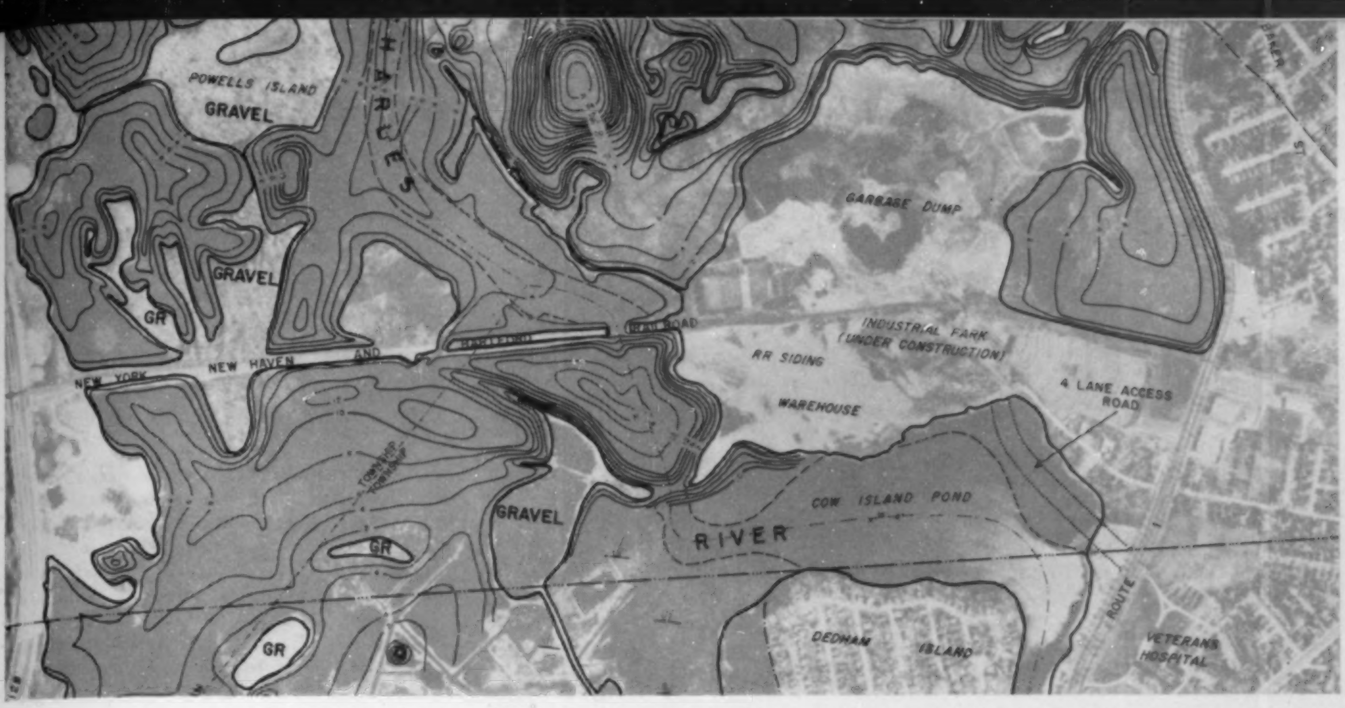
Mapping and



AERIAL PHOTOGRAMMETRY begins with a pair of photographs of a land object (top). In stereo viewer (center), an operator sees the object in three dimensions and is able to determine its relative elevation, which is transmitted to a plotting machine (bottom) which plots contour lines on a topographic map (opposite page). Analysis of this area, near Boston's Charles River, indicated that, because of closeness of bedrock, it could be developed for industrial use, despite its inhospitable, marshy appearance, which had discouraged the region's development for years.

The extraordinary fact about photogrammetry—the measurement and analysis of depth, angles, planes, and other features in three-dimensional photography—is the attention it is getting today. It is rapidly becoming a key tool in city planning, perhaps the most dramatic use of it in this century being the planning of a new capital city for Brazil, now rising on a wilderness site selected by photogrammetric analysis. It is being used even more widely today in pin-pointing and analyzing smaller sites, for everything from highways to shopping centers. In architecture, surprisingly enough, photogrammetry is developing as a new research tool for studying buildings, not only in their historical aspects but also in their structural behavior, a tool that someday may have important influences on new structural designs.

Basically, all this dates from 1832 and the invention by Sir Charles Wheatstone, the famous British physicist, of the stereopticon, which became a fond fixture in Victorian parlors. The essential principle of the stereopticon was the taking of two photographs of an object from slightly different angles to simulate the double vision of human eyes. When this double photograph was placed in a viewer that separated the images, one to each eye, the eyes blended the pictures into one to create



Photoanalysis prompted development of this long-neglected area of Boston.

measuring in 3-D

BY DAVID ALLISON

the illusion of depth or a third dimension. Later in the century, a French army officer named Aimé Laussedat took stereoscopic photos of Paris from a balloon and made maps from his glass-plate exposures, the first recorded application of stereoscopy to aerial photography, a technique that was to grow in World War II into a huge and precise instrument for aerial reconnaissance.

The essential principle of today's aerial work, as of the early Victorian studies, is the double photograph from slightly different angles, which contains more than an illusion. The flat photographs contain essentially all the dimensions in depth and proportion of the object photographed, whether it be a city, a house, or a grain of sand. When the photographs are placed in an illuminated viewer, similar to the old-fashioned stereopticon, a skilled operator can detect differences in elevation from one point to another. By coupling a plotting device to the viewer, the operator can reproduce a contour map of the object. Looking through the viewer, the operator sees the object in three dimensions; he also sees a round speck, called a depth dot, which he can move by means of dial controls. His function is to place the dot precisely on a point on the three-dimensional object, as though he were suspending a ball on a long string from some fixed point in the sky. With proper skill, he can so place the dot that it is neither beneath the surface nor hovering somewhere over it. And by observing the exact position of the dot he can determine the relative elevation of the point it is placed upon. Following this procedure with a long series of points on the photographs, the operator uses his visual ability and his plotting machine to reproduce the photographs in the form of a topographical map.

Three developments have transformed stereoscopy from a parlor pastime and later a movie-house stunt to a serious science with countless applications. One was the development of plotting machines, which can now make precise measurements of the photographic images—from which photogrammetry gets its name. The second was the development of the art of photoanalysis: looking at a three-dimensional image and being able to tell the nature of the terrain, i.e., whether it is rock, sand, or clay, the depth from surface to bedrock; this phase of development has largely been the responsibility of geologists. The third development has been the application of the electronic computer to stereoscopy, enabling the most comprehensive analysis of the abundant information provided by the camera. Together, these techniques of measurement and data interpretation are largely responsible for the fact that, whereas nearly all states ten years ago laid out their highways by ground survey and manual computation, today almost all use photogrammetry to some degree and at least a dozen use it as a major tool in highway planning and design.

City planning from the air

In the past ten years, some 50 cities and towns in the U.S. have used photogrammetry and photoanalysis in laying out their development plans. With photogrammetry, the planners can determine the geometry of the land, which is first recorded by a special precision camera which makes overlapping photographs of the terrain. From these photographs, with the aid of a viewer and a plotting machine, a contour map is produced, indicating simply the topography of the area. In addition, the community will probably require geological information as determined by photoanalysis. The findings are plotted on the contour map, indicating drainage patterns and general ground conditions. With this information, the area can be zoned properly so as to prohibit housing development, for example, in areas which could cause contamination of the city's water supply. The same

How Brazil found a new capital

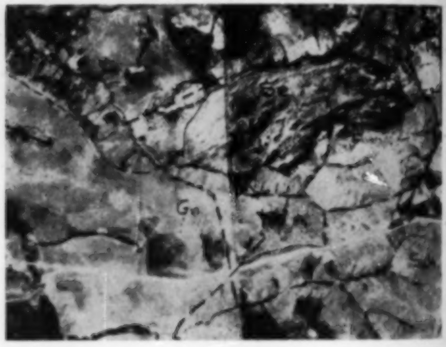
WILDERNESS INTO CITY: Brazil is the first nation in history to select a new capital site for sound economic and scientific reasons, as well as for climate and beauty. To the untrained eye, the Brasilia site (left) looks no different from scores of others in the vast, 20,000-square-mile area. But with aerial photogrammetry and photoanalysis, engineers and geologists of Donald J. Belcher & Associates could examine and chart (above and right) land configurations, types of soils, depths to bedrock, water potential, feasibility of transport links, and other factors (below), then recommend likely sites. Model of new capital (far right) is on display at Cornell University, where Belcher teaches photoanalysis. City itself is now in construction, some 500 miles northwest of old capital, Rio de Janeiro.

information could be obtained, of course, by means of conventional ground survey and analysis. But the photogrammetric techniques are usually less costly. See "The cost of photomapping," page 125.

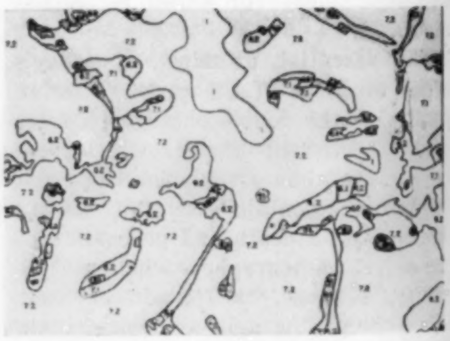
In the U.S., probably the most notable example of photogrammetric techniques applied to community site planning is the Air Force Academy site in Colorado. Engineers Alster & Associates, Washington, D.C., examined a mountainous area of 35,000 acres by photogrammetric analysis before the present 17,500-acre site was finally selected. The analysis also provided technical data for construction, including utilities placement, road building, etc. And Architects Skidmore, Owings & Merrill used this information in planning building placement and orientation. By contrast, the giant new capital city project, in Brazil, which was handled by Photoanalyst Donald J. Belcher, of Ithaca, N.Y., required a survey of 20,000 square miles—12.8 million acres—from which an 80-square-mile site was selected. A comprehensive land survey of this tremendous area—one-half the size of Ohio—would have taken years, and probably would have cost several million dollars. With aerial photography, it was done for $600,000 in a period of ten months, including time for topographical map making and photoanalysis, details of which are shown in the photos above and to the right.

Highways by camera and computer

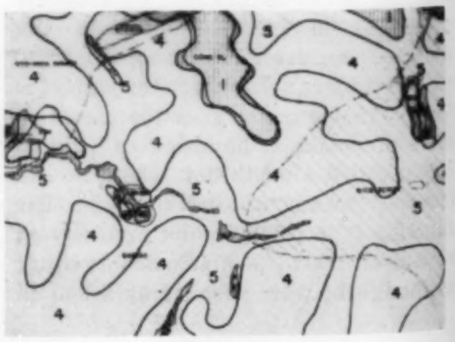
Photogrammetry is a tremendous aid in highway planning. When used with an electronic computer, photogrammetric measurements of terrain can suggest the most economical path for a new roadway, based on such factors as the amount of earth moving which will be required. During the current $100 billion federal and state highway building program, it is estimated that $200 million will be spent on photogrammetry for highway studies alone. The estimate, by Professor C. L. Miller, director of MIT's Photogrammetry Laboratory, prompts his further forecast that an "automation system" will be developed which will enable far more efficient planning for future highways. In conventional practice, he says, we eventually arrive at a satisfactory route between two points, "but we do not necessarily arrive at the *best* route." Miller believes that in the next decade there will be considerable activity in integrating map making and electronic computing. "Photogrammetry," Miller says, "is the most efficient system for terrain data procurement, and the computer is essential for the reduction of large amounts of



Air photo of portion of site.



Map overlay indicates land use.



Second overlay shows types of soils.

PHOTOS: CORNELL PHOTO SCIENCE STUDIOS

data. But the two must be integrated for maximum efficiency."

At MIT, Miller and members of the Department of Civil and Sanitary Engineering are developing such a system, called the digital terrain model. Information from aerial photos—elevation of hills, depths of valleys—is converted into columns of numbers and fed into a digital computer.

With this data, the computer can predict how much excavating and filling will be necessary to build a road. If the engineers then want to change the route or the design of the road, the computer can quickly report how the earthwork requirements will differ. When fully developed, the digital terrain model will be used to obtain numerical solutions to many types of terrain analysis problems, in addition to highways: surface change studies related to settlement, erosion, silting; clearance studies for airport approach zones, and the problems associated with drainage and reservoirs. Says Miller: "Photogrammetry will usually offer the only practical approach to the problem of collecting the required data; the electronic computer makes it possible to consider computating problems which would require an army of men with desk calculators."

Even without such advanced systems, those states which now use photogrammetry in highway work are able to save considerable sums over conventional surveying. In California, for example, where photogrammetry has been used in highway planning since 1947, State Highway Engineer G. T. McCoy says it is saving the time and effort of an estimated 200 engineers a year. And with developments such as MIT's digital terrain model and an automatic scanning system, which will reduce engineering man-hour requirements still further (page 125), photogrammetry could be headed toward a commanding position in every type of planning which requires vast computations in order to make intelligent judgments.

Site location in 3-D

In the selection of a site for a shopping center or an industrial building, photogrammetry can be an important aid in predetermining drainage characteristics—particularly important in planning parking lots—and grading requirements. Some dozen shopping centers have used photogrammetry in site planning. Its kindred tool, photoanalysis, furnishes information on population and labor supply, highway accessibility, convenience of utilities, as well as geologic information on soils.

Well over 100 industrial firms have used both photogrammetry and photoanalysis for such things as planning new pipe lines and rail lines, and for plotting new sites for speculative oilfield drilling rigs. And many use the techniques in selecting new plant sites. In airport planning also, photogrammetry is an important device for locating dangerous structures along the flight paths of low-flying aircraft.

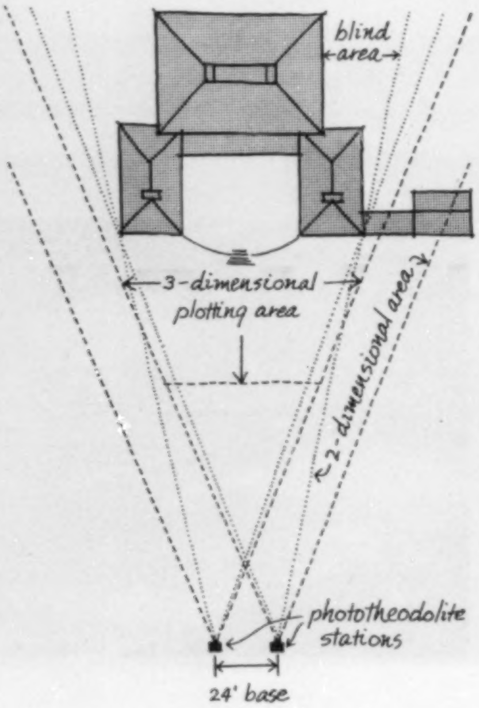
Architecture in a photographic plate

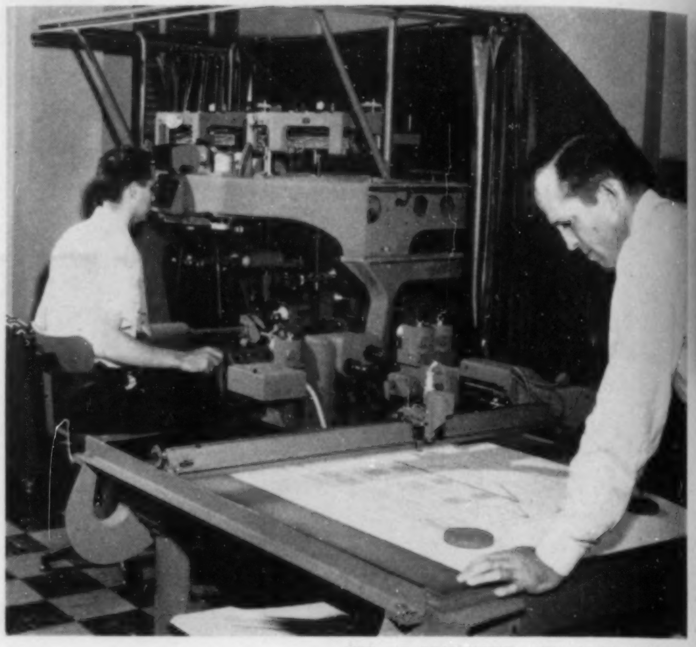
Because three-dimensional photography allows, among other things, the reproduction of accurate optical models from its images, photogrammetry has been used for years, particularly in Europe, as an important aid to the architectural historian for the recording and restoring of historic buildings. Since the turn of the century, the Germans have recorded their outstanding pieces of architecture in this way, and since World War II so have an increasing number of countries, including Sweden, Switzerland, Belgium, and, more recently, the U.S. From these photographic records, precise, undistorted drawings can be produced, though the buildings themselves may have been destroyed, and the original engineering drawings may be nonexistent or may have long since disappeared.

Before the last war, with typical Teutonic calculation, the Germans prepared

Photogrammetry and architecture

OHIO HISTORICAL SOCIETY





DEPT. OF PHOTOGRAPHY, OHIO STATE UNIVERSITY

for their impending destructiveness by rushing hundreds of invaluable glass plates of their historic buildings to safekeeping in Potsdam. At war's end, they figured, the plates could be brought out, drawings made, and the buildings restored to prewar grandeur. However, like the best of schemes, this one went awry, for when the Russians reached Potsdam in 1945, they encountered an uncomfortably short supply of window glass. The historic plates were wiped clean, at a cost of much elbow grease, and used for glazing.

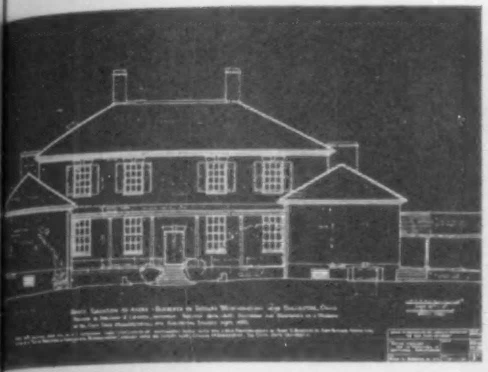
Since the war, photogrammetry has found new applications in architecture. In Germany, an engineer named Josef Sutor has made a profitable sideline using photogrammetric techniques in restoration plans for historic buildings, including St. Peter's Church in Munich, the City Hall in Augsburg, and the four corner towers of the Aschaffenburg Castle. Sutor had to find old pictures, generally taken by amateur photographers; in most cases, he was able to find two photographs taken from different angles, from which—with a slide rule and calculator—he could determine the exact position of the camera when each picture was taken. With further mathematical computations, he developed an engineering drawing of the building and from it read off the building's exact measurements.

Sutor also has applied photogrammetry to the construction of a new theater ceiling in Augsburg. A model of the theater had been built, with a rather complex ceiling, folding in various patterns and shapes. The theater's main illumination was to be from a mushroom-shaped ceiling fixture, slightly off center. When the architects attempted to calculate the exact measurements of the model, and from them determine the dimensions of the theater's ceiling, to guide workmen in its construction, they found that many dimensions were extremely difficult to arrive at. But with photogrammetric pictures of the model, taken from three different positions, Sutor was able to calculate the height of the ceiling at 1,700 different points. From this rather unorthodox process, architectural drawings were produced.

Study of structures in motion

The newest and most scientifically interesting use of photogrammetry is in a project, under way at Ohio State University since 1954, applying the same basic principles to determine how structures behave under differing thermal and load conditions. By comparison with other applications of photogrammetry, this one is pure research in its infancy. Indeed, the Ohio State researchers, headed by Architecture Professor Perry Borchers, have not yet proved that photogrammetry can be used to record the subtle movements of structures during varying thermal conditions. Their first attempt, studying a modern, dome-shaped synagogue near Cleveland, proved only that their present equipment does not give them sufficiently fine analysis for accurate readings. It is known, from even the most casual observation, that thermal deformation takes place in the synagogue. On bright, cold days—when the building is partly in sun and partly in cold shadow—enough deformation has been known to take place to shatter the plate glass between supporting piers beneath the dome. Borchers is in Europe now, seeking measuring equipment which can detect these slight changes in structures.

Clearly, this is an application of photogrammetry which can contribute significantly to the knowledge of structures. As Borchers says: "Every expansion joint testifies that buildings are living, moving things." He believes that a series of photographs, taken at hourly intervals, could indicate how much movement actually takes place in such structures as Eero Saarinen's domed Kresge Auditorium at MIT, or any of today's thin-shell structures. The Kresge Auditorium was originally



PHOTOGRAMMETRY enables Ohio State Architect Perry Borchers (standing, left) to produce orthographic drawings of historic buildings, such as Benjamin Latrobe's Adena, built in 1807, near Chillicothe, Ohio. Borchers is applying photogrammetry in a basic research project as well, attempting to measure subtle movements of structures under varying thermal conditions.

designed by Saarinen and Engineers Ammann & Whitney for 2 inches of movement around the glass and frames. A photogrammetric analysis of the dome's actual behavior might have a significant influence on the design of similar structures in the future, by indicating precisely how much movement to anticipate.

In practice, Borchers' application of photogrammetry is only slightly different from that of the aerial photogrammetist or the architectural historian. He begins with a pair of photographs, and from these produces an orthographic drawing (or map) of his object, using plotting machines and measuring equipment. The nature of his study, however, requires an additional element, time, for Borchers must solve a dynamic problem, i.e., how much movement occurs from hour to hour, under varying conditions of wind load, live load, and thermal expansion and contraction.

Borchers is also using photogrammetry to record historical American architecture. His first subject was Adena (above), a stone mansion near Chillicothe, Ohio, which was designed by Benjamin H. Latrobe and completed in 1807, possibly the first building in the U.S. to be recorded with photogrammetric equipment. As a part of the research program at Ohio State, Borchers and his associates are working with the National Park Service to determine to what extent photogrammetry is applicable to the NPS historic building recording program. Thus far, Ohio State has completed the first of two parts of the study, which consisted of producing photographic plates and measurements of the exteriors of four buildings. Still in progress is part two: photogrammetric work on building interiors.

Next step in photogrammetry

For at least two years, the field of photogrammetry has been on the threshold of an important new advance: an automatic scanning system. This device would speed up the one remaining drag in proceding from photograph to topographical map, i.e., the slow, skill-demanding technique of manually translating from stereophotographs to maps. The scanner "reads" the photographs and transmits this information to a plotting machine. Several of the major equipment developers in the field have been working toward the perfection of this device, including such organizations as the U.S. Army's Engineer Research and Development Laboratories at Fort Belvoir, Virginia, and Hogan Laboratories, Inc., of New York.

The most recent announcement, from a Canadian mapping company, Photographic Survey Corporation of Toronto, indicates that a working model has been built, though further developments must be made before this electronic and electromechanical device can be put into commercial production. At its present stage of development, the device can produce profiles from stereophotographs, indicating the elevations along a selected line. Later in the year, the company expects to be able to adapt the device to contour mapping. Inventor G. L. Hobrough says that an operator will be necessary to monitor the machine, but he believes that the speed of profiling will be increased up to 100 times over that of conventional profiling methods.

Adding an electronic computer to such a device, an almost limitless number of engineering problems could be solved within a matter of a few hours, regardless of type, e.g., highway planning, site planning, thermal deflection. But MIT's C. L. Miller emphasizes that much more research work needs to be done. The federal mapping agencies, such as the U.S. Geological Survey division of the Department of Interior, and private aerial survey firms, have been responsible for most of the developments in photogrammetry in the U.S. In the future, Miller suggests more cooperative research among industry, government, and the schools of engineering and architecture to develop further photogrammetry's useful role in building.

The cost of aerial photo-mapping

To planners who are using photogrammetry for the first time, its most bewildering characteristic is its price structure. A fixed table of costs does not exist, because so many variables exist from one project to the next. Further, photogrammetry is currently an extremely competitive field and bids are likely to range widely.

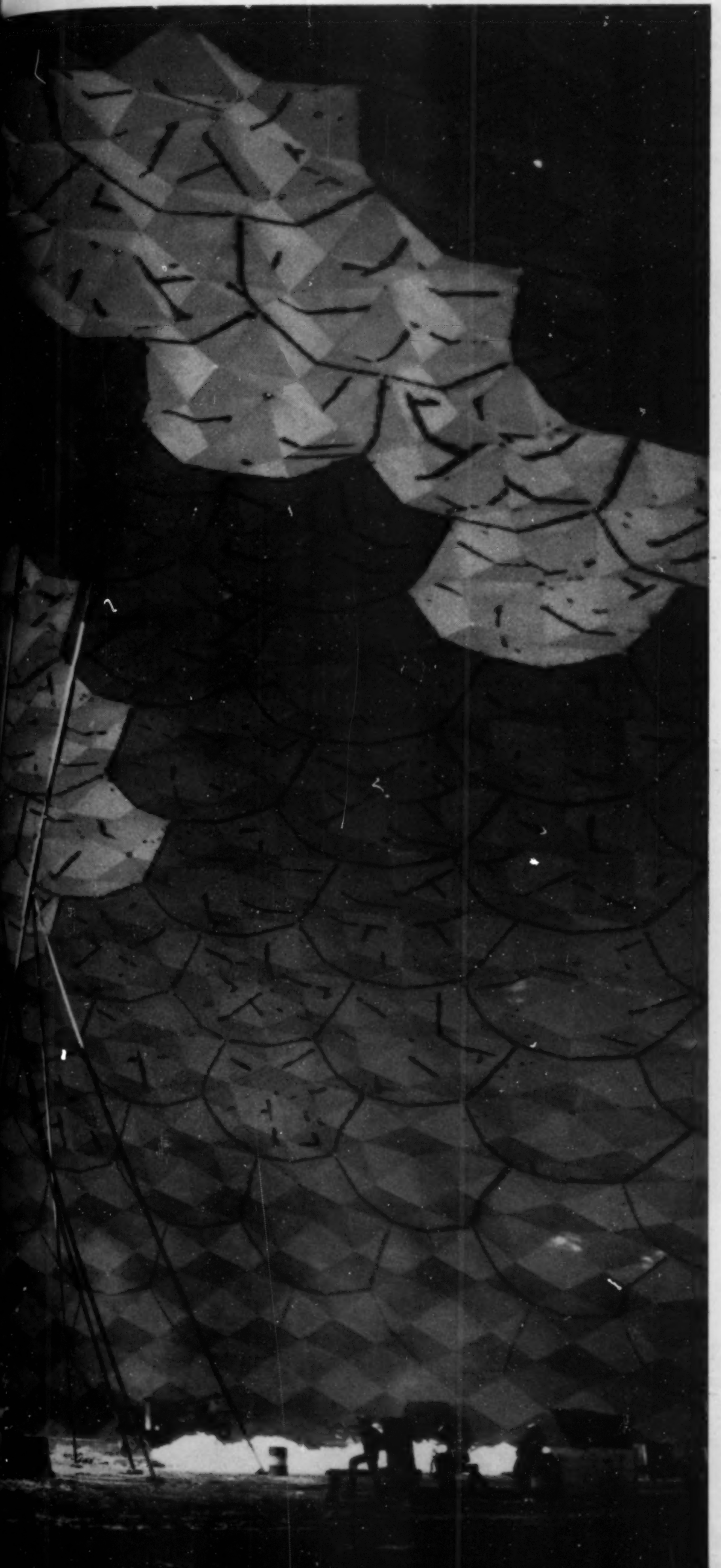
For example, the cost of photogrammetry in a dozen actual cases examined by FORUM has varied from $3 per acre to $38 per acre, depending on the size of the job (50 to 6,400 acres), the contour interval of the desired map (2 feet or 5 feet), and the character of the terrain (open or wooded, level or hilly). In one example, a 70 acre area in hilly wooded country, the bid prices ranged between $7 and $20 per acre, for a 2 foot contour map. Also, pressures of competition can influence the quality of output: photogrammetric maps should be spot-checked by ground survey to be certain that National Map Accuracy Standards are observed.

Generally, aerial mapping is less costly than ground survey mapping. An area in excess of 50 acres will usually cost four to six times as much to map by ground survey techniques as by aerial photogrammetry. Here is a fairly typical example: a 640 acre area of hilly, wooded terrain was let out for bids to both ground and aerial surveyors. The contour interval desired was 2 feet. Bids from the aerial firms ranged between $16 and $18 per acre; bids from the ground surveyors ranged between $50 and $125 per acre. Below 50 acres, the cost of aerial surveying approaches the cost of ground surveying, because of the high initial cost of getting an airplane into the sky. END

Geodesic roundhouse:

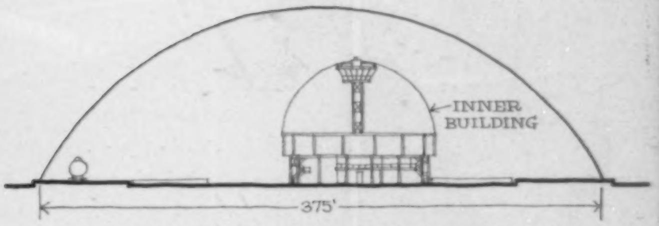
PHOTOS: IVAN MASSAR—BLACK STAR

the biggest dome yet built

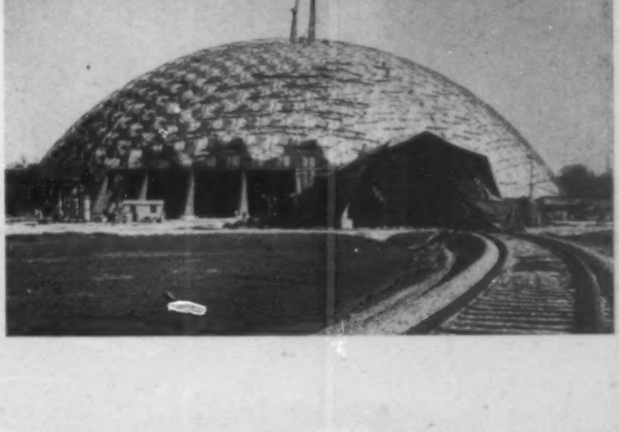


The largest, most utilitarian dome to be built thus far is rising on a muddy flat outside Baton Rouge, Louisiana. It will house a railroad car repair shop of the Union Tank Car Co. Designed by Synergetics Inc., a firm founded by R. Buckminster Fuller, inventor of the geodesic dome, the new structure is not only the largest of its kind—375 feet in interior diameter, 116 feet high at center, covering 110,000 square feet—but the first all-welded steel dome.

Union Tank Car's President Edwin A. Locke Jr., a friend of Fuller's, and Chief Engineer Richard Lehr, chose the Synergetics' dome after reviewing wooden frame, radial arch, and traditional brick roundhouse designs. The dome's merits were decisive: a huge free-span area, allowing 36 car repair stations under one roof, with all operations under cover for an economical distribution of work load regardless of weather. Moreover, the completed dome was estimated to cost only a little over $1 million, about half as much as a comparable shop of conventional design. Included in this is the cost of a smaller domed structure rising 80 feet within the big dome itself to house offices, washroom, and locker area, and



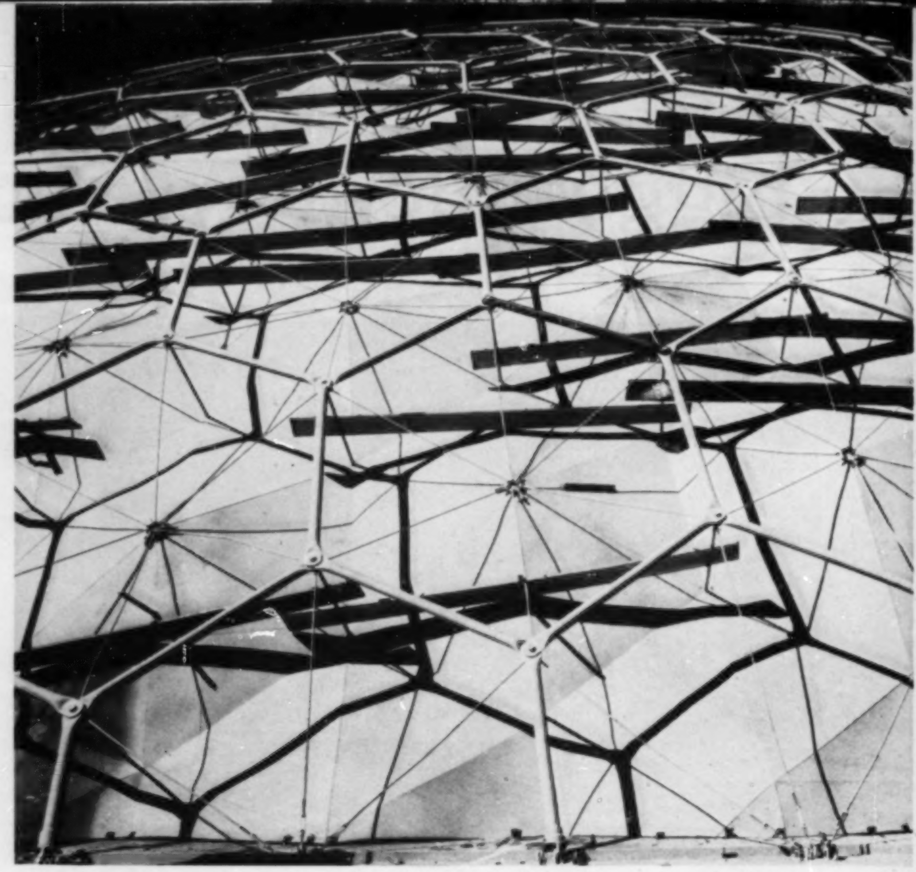
HIGH VAULT of the dome is formed of 320 hexagonal subassemblies (some test-painted white), hoisted by crane, positioned by push poles, welded in place from the rooftop. A smaller dome inside the first (sketch above) houses offices, services, control tower.



a control tower for shunting tank cars to various repair stations.

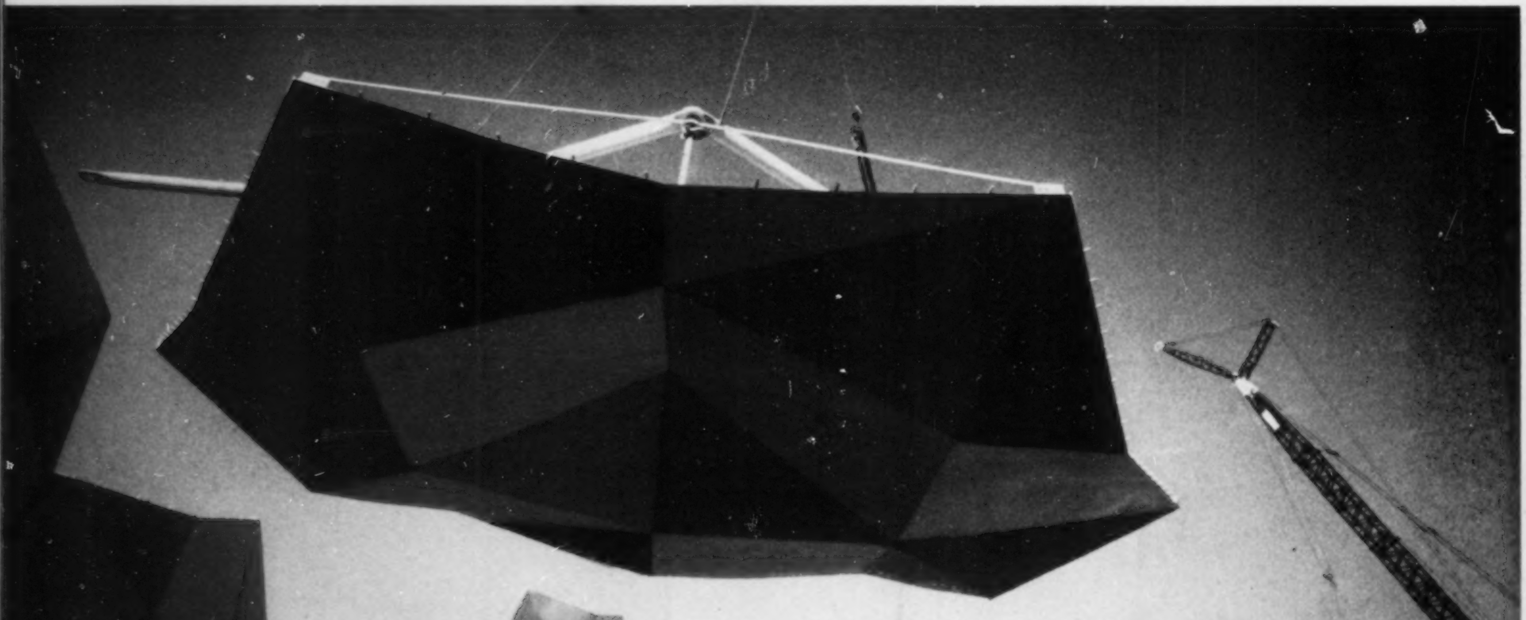
Steel was chosen partly because the 11-gauge sheet required was the same as that used by Union Tank in fabricating its cars. Aluminum was considered, along with a prefabricated Kaiser Aluminum dome (FORUM, February 1958), but Kaiser was not ready to scale up its 65-foot-high dome for one order. Moreover, aluminum worked out more expensive than steel. Fabrication and erection of the steel dome was contracted to the local Nichols Construction Co. Sheet was cut into diamond-shaped panels on the site, then seam-welded together in jigs and welded to steel-pipe trusses for rigidity, forming some 320 hexagonal subassemblies, each measuring 20 feet to a side and weighing 2 tons. These in turn were hoisted by crane and welded together in place, building the structure, like an igloo, from the ground up.

Union Tank will start a second shop dome this month at Wood River, Illinois, and plans at least two more.



HONEYCOMB of pipe trusses, welded to upper side of subassembly units, give the dome rigidity and relief pattern. Panels of the completed dome will be painted golden yellow, structural truss lines a royal blue.

STRANGE PATTERN of construction resembles artist's projection of building on the moon. Hexagon subassembly, formed and welded in jig on ground, weighs 2 tons, measures 20 feet on a side. Erected entirely without scaffolding, units are welded in place in dome, as seen in background, like igloo blocks.



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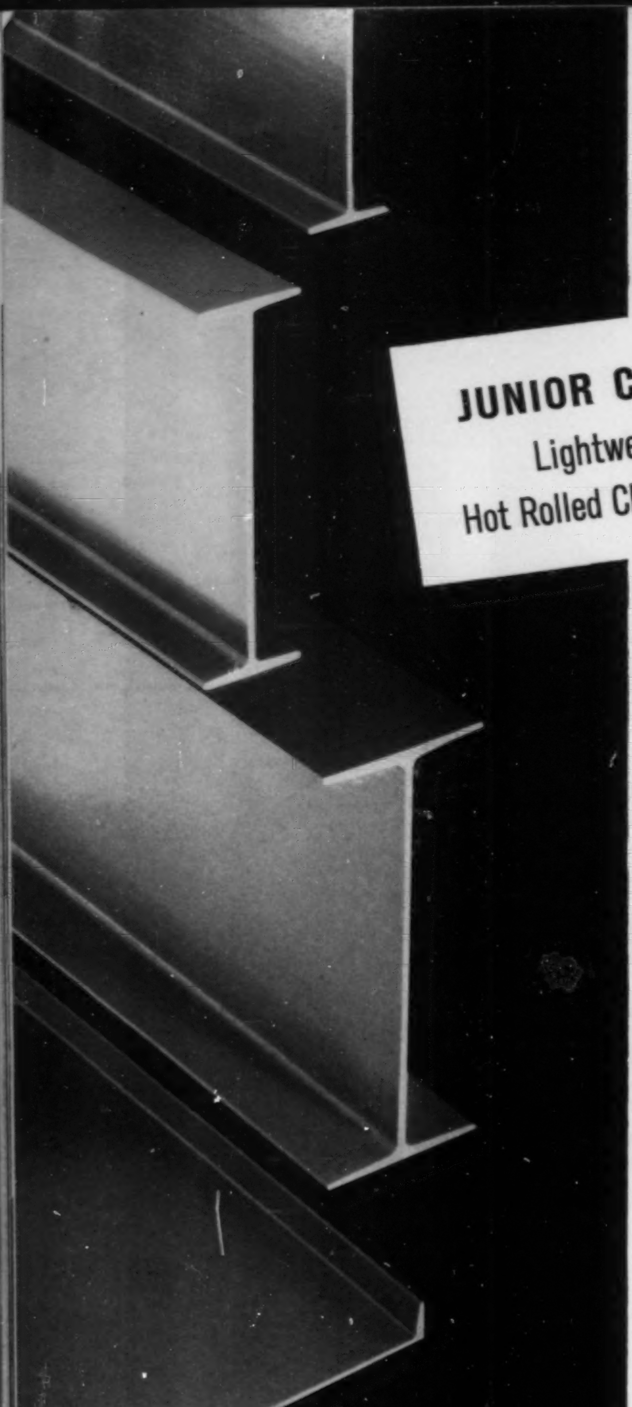

JUNIOR CHANNELS

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Hot Rolled Channel Sections

Potomac Iron Works is using 10" Junior Channels (8.4# per foot) as stair stringers in this 15-story Baltimore, Maryland, state office building with 12-gauge J&L hot rolled sheet steel as risers. General contractor: Blake Construction Company, Washington, D. C. Architects: Fisher, Nes, Campbell & Associates, Baltimore.

"Clean edges and uniformity of Junior Channels speed stair fabrication"

. . . states leading architectural metal fabricator

"We have standardized on Junior Channels for stair stringers. They permit us to prefabricate stairs to exact dimensions with a minimum of waste," reports Mr. Milton M. Mulitz, president of the Potomac Iron Works, Inc., Hyattsville, Maryland.

Potomac Iron produced and installed 92 flights of stairs in this 15-story Maryland State Office Building and the adjacent six story Maryland State Roads building in Baltimore. Potomac Iron manufactures over 5,000 prefabricated stair units yearly for residential, apartment and commercial construction.

"Junior Channels are stronger than formed plate channels of equal depth. Yet their minimum steel weight speeds handling and fabrication," says Mr. Mulitz.

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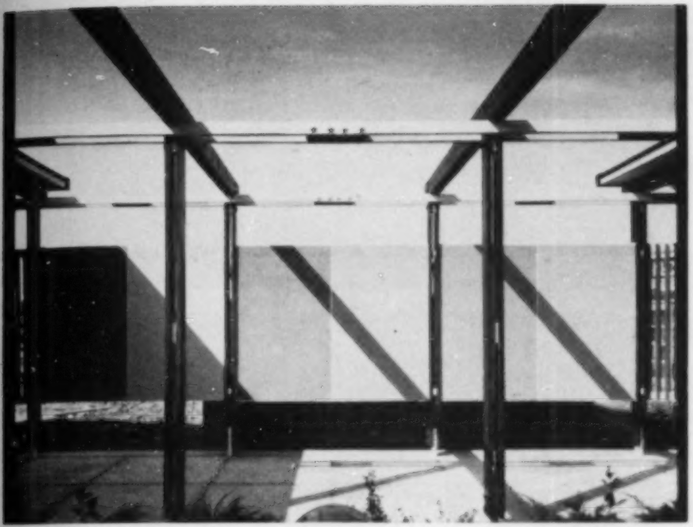
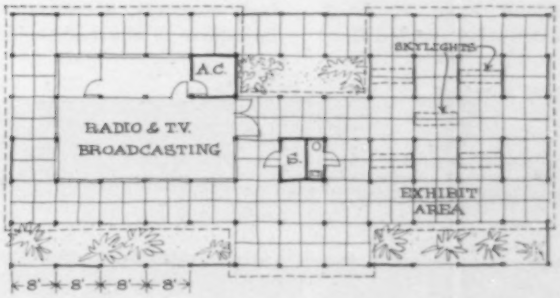
Close-ups

A focus on current architecture

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SKYLIGHTS
EXHIBIT AREA
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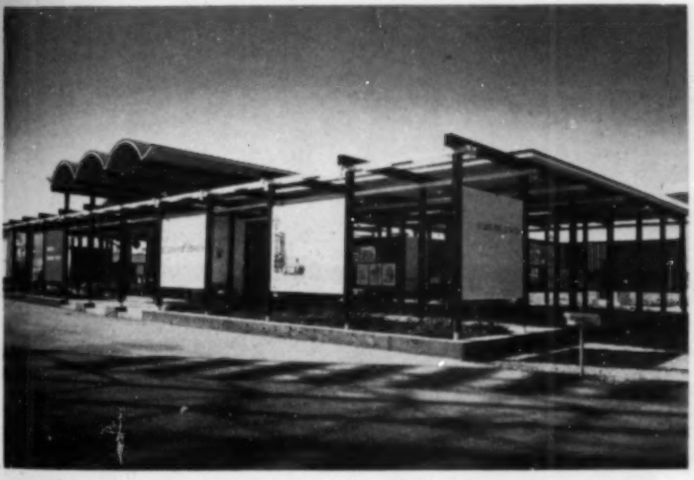

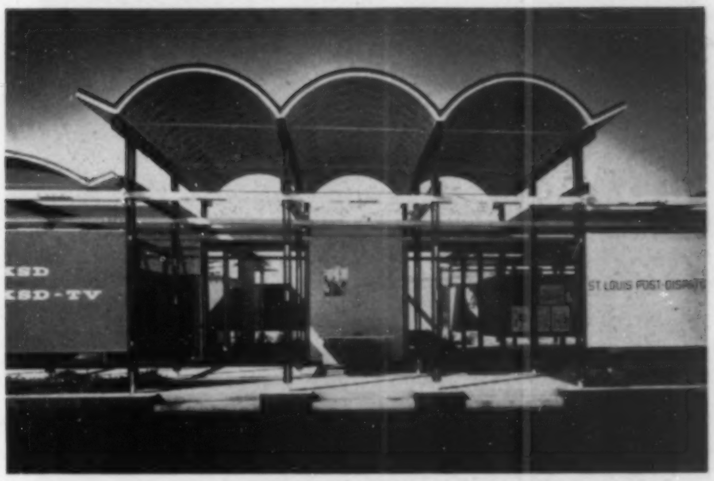
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PHOTOS: MAC MIZUKI

REPORTING A NEWS EVENT
How the story gets to the reader...

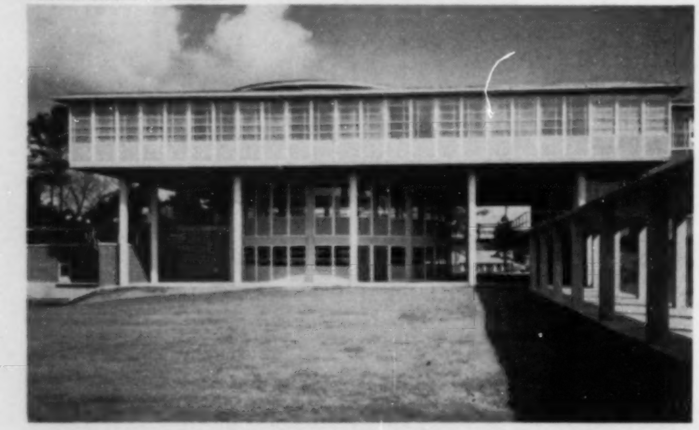
PAVILION FOR THE PRESS

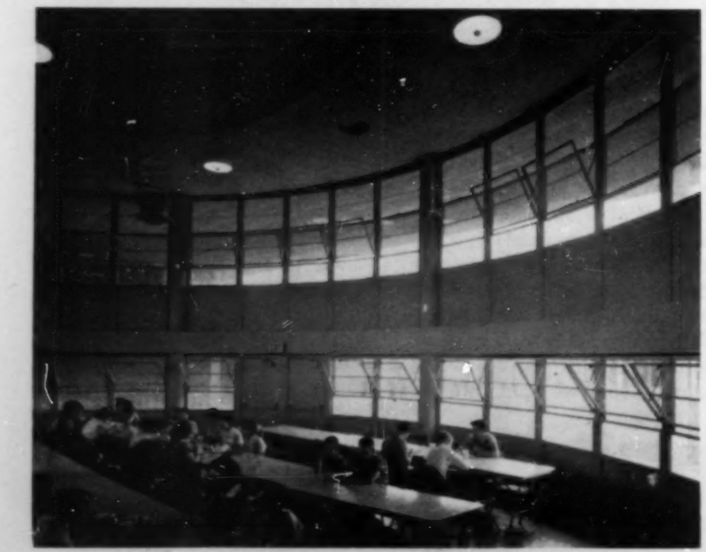
This crisp little exhibition structure was designed by Architects Hellmuth, Obata & Kassabaum for use by the St. Louis *Post-Dispatch* at St. Louis' Mid-America Jubilee. It centers on an open entrance and reception area roofed by a trio of high wooden vaults built on the latticed "lamella" system. To the right of the entrance, colored photo panels form the walls and present a step-by-step account of how a newspaper covers a typical story (photo, left). To the left, under a single 16-foot lamella vault, is a glass-enclosed, air-conditioned studio for the paper's radio-TV station. The simple wooden structure, bolted together on an 8 foot module, has been disassembled for re-use elsewhere.

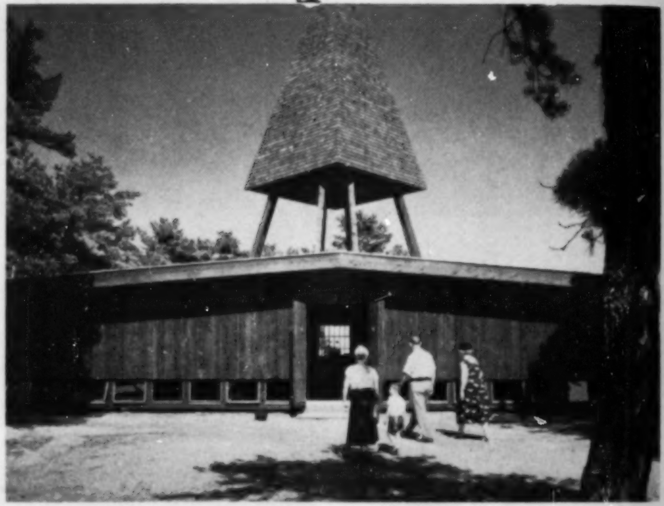
ROUNDHOUSE FOR STUDENTS

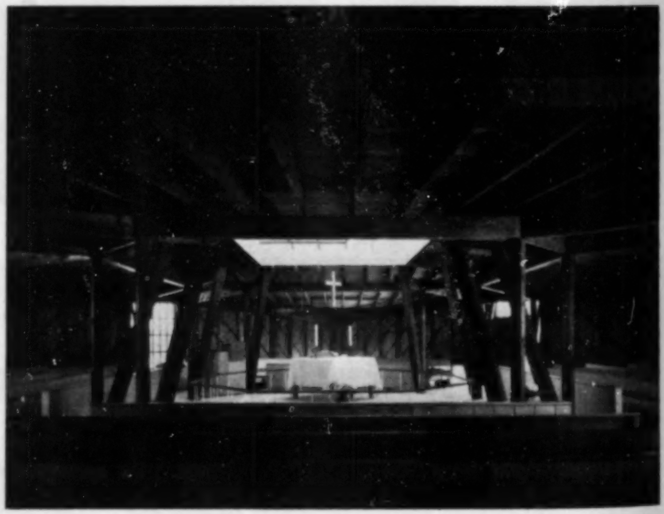
In their attempts to cut costs, many school districts have accepted stereotyped school design. At the new Headland High School in East Point, Georgia, however, Architect Richard Aeck & Associates made sure the students would have at least one feature that was different. Headland's drum-shaped cafeteria and library core is not only distinctive, it provides a natural focal point inside, and a place for the students to mill around outside under the sheltering second floor. When the student body expands, a balcony will be added to the cafeteria.

PHOTOS: JOSEPH W. MOLITOR









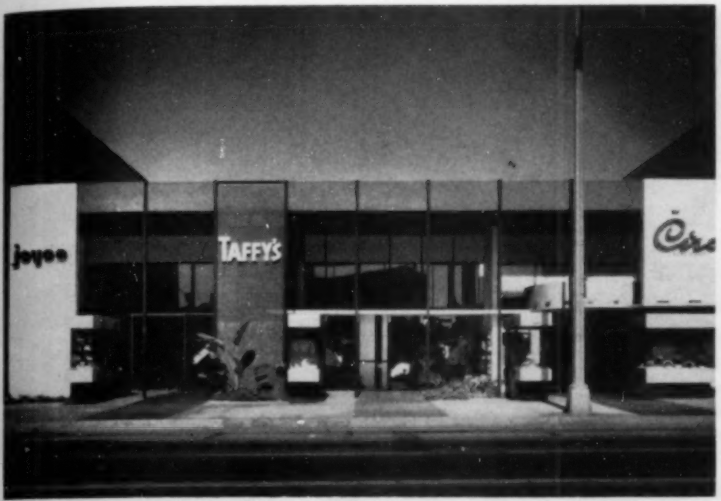
NEW ENGLAND STEEPLE

One of the more striking tourist attractions on Cape Cod is a little creosote-stained wooden church which thrusts a big, shingled bell tower skyward near Wellfleet, Massachusetts. Designed for their fellow summer residents by Architect Olav Hammarstrom and Engineer Paul Weidlinger, the Episcopal Chapel of St. James the Fisherman seats 300. Cost: only $22,000. Windows along the floor admit the breeze and reduce glare. A plastic panel in the roof skylights the central altar.

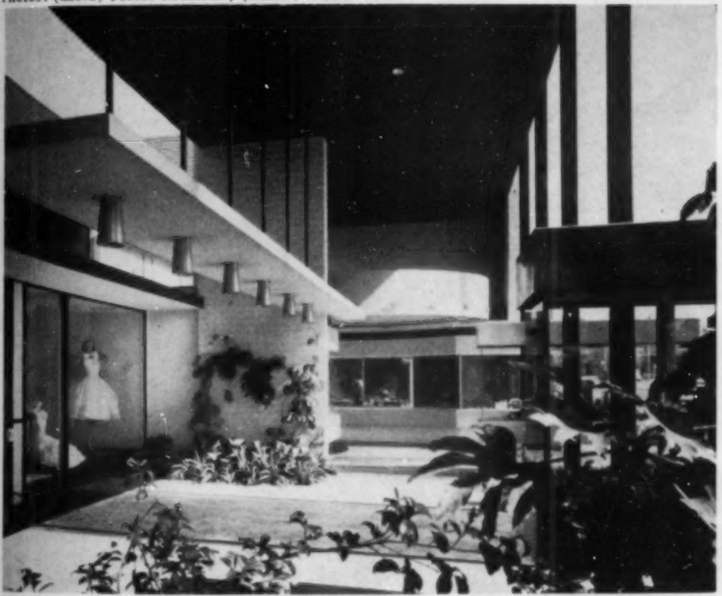
GLAMOUR ON A 60 FOOT LOT

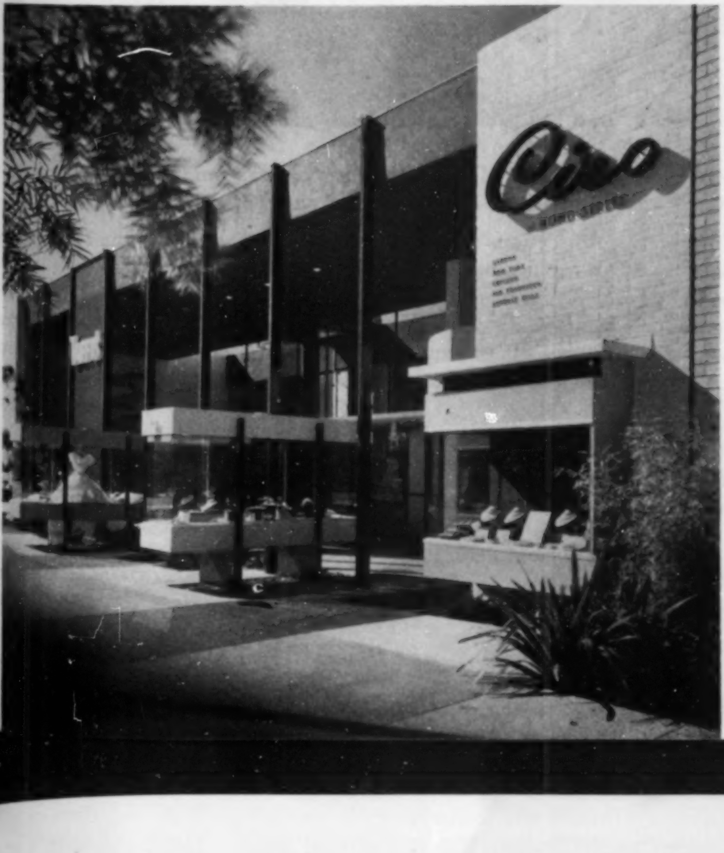
Most Main Street shops seem bent on cramming as much merchandise as close to the sidewalk as possible. In this new building on Pasadena's South Lake Ave., however, Architect Thornton Ladd and his associates have managed to group three stores (shoes, dresses, and jewelry) behind a display garden that offers the passer-by the glamour of a modern shopping center—on a 60 foot lot.

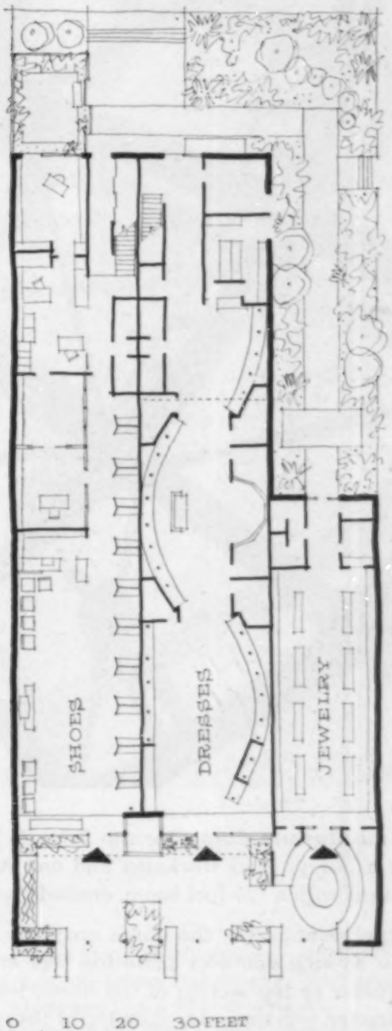
In front, black and tan strips of sidewalk and free-standing display cases direct customers under the shelter of a high roof for a closer look at full-size show windows. Here philodendrons and aspidistra set off the cooling sight of water spilling into little pools. In back, each store has its own landscaped entrance from a parking lot.



PHOTOS: (ABOVE) JULIUS SHULMAN; (BELOW) MARVIN RAND







Auditorium dome erected in 9 days by a 5-man crew

John J. Kane Hospital, Allegheny County, Pittsburgh, Pa. Auditorium is 109 feet in diameter, seats 682 people.

This auditorium dome for the John J. Kane Hospital went up in a hurry. Four workmen and one superintendent, using one crane with a 125-foot boom, erected the steel work in 9 days.

In preparation for the dome erection, a 20-inch pipe pole with a 48-inch diameter plate top was erected and plumbed. The spider or top section of the dome, which is about 11 feet in diameter, was then placed on top of the pole and bolted down.

The USS Structural Steel ribs were prefabricated on a 53'-7½" radius. They were made in two sections and were field-welded to form one rib almost 80 feet long, depending on the base elevation. The first rib was erected on the west side, followed by one on the east side. Erection then continued clockwise from both points.

The horizontal structural members were bolted in as erection progressed. Most of the bracing was omitted during erection and was filled in by the detail gang later on.

All sections were prefabricated in the plant of the Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.

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Auditorium dome fabricated from USS Structural Steel, erected by Adams Steel Erection, Kittanning, Pa. • Contractors: Sherry-Richards, Chicago, Ill. • Architects: Button and McLean—Mitchell and Ritchey, Pittsburgh, Pa. • Resident Engineer: Harry King, Allegheny County • Structural Engineers: L. W. Cook—R. A. Zern, Pittsburgh, Pa.

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Mo-Sai magic for motels...

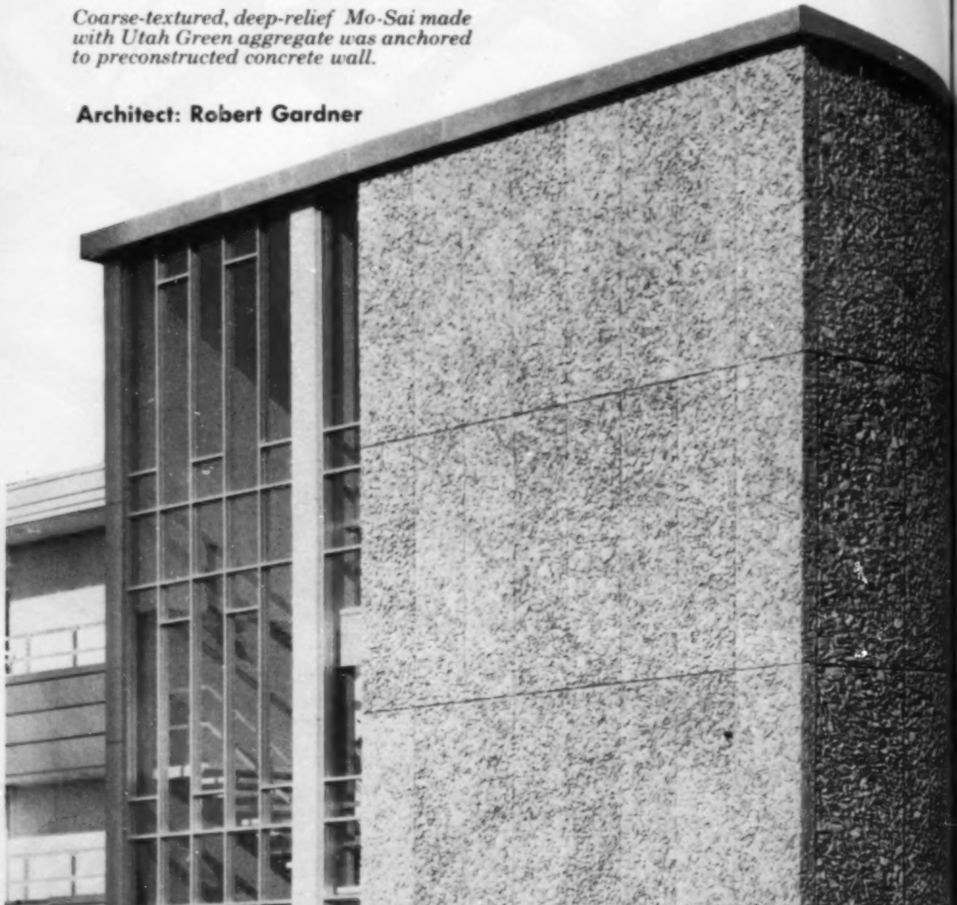
Interesting stairway extending up three flights of main tower has unique Mo-Sai cantilevered stair treads.

The new multi-million-dollar Hotel Utah Motor Lodge and Convention Center in Salt Lake City is enhanced with Mo-Sai Precast Facing in a striking tri-tone harmony of colors and textures. The featured tower sections are faced with an extremely course-textured green Mo-Sai. The same color in a much finer texture is picked up in the spandrels. Pilasters and other sections of the main facade are in a fluted Mo-Sai.

East facade of building shows fluted Mo-Sai, along with medium-textured flat panels. These were anchored to concrete masonry back-up wall.

Coarse-textured, deep-relief Mo-Sai made with Utah Green aggregate was anchored to preconstructed concrete wall.

Architect: Robert Gardner



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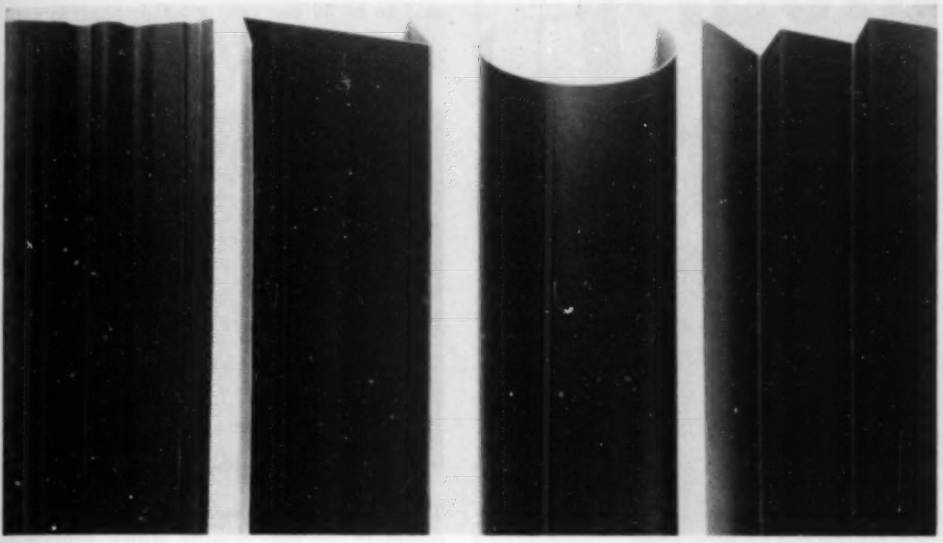
Products

Colored stainless steel . . . lightweight ceiling panel . . . embossed siding sheet . . . low-cost wood finishes



COLORED STAINLESS STEEL withstands weathering and bending

Colored stainless steel, a long-awaited architectural material, will be available later this year as a result of a coloring process called *Permyron*. Invented by the late Oscar Bach and developed by the Electro Metallurgical division of Union Carbide, the *Permyron* process is unique in that applied colors will not crack or fade with age, and colored parts such as curtain wall panels and trim can be deep-drawn, bent, rolled, embossed, or fabricated by other conventional methods *after* coloring without impairing their surfaces. Simple bend tests show that the colored surface remains intact when bent 180 degrees in tension around a radius approximately equal to sheet thickness. Tensile tests indicate that there is no visible effect on the coloring up to 50 per cent elongation. And under heat tests *Permyron*-colored metal can withstand forming and fabrication temperatures of the order of 650 to 700 degrees for sufficient time to be worked.

Another advantage claimed for the process is that parts damaged during erection or handling can be repaired on the job. In addition, this highly flexible color coat, which is only 0.0004 inch thick, is said to be weather- and abrasion-resistant, and is expected to cost less than standard porcelain or anodized finishes.

The process, according to the manufacturer, also shows promise for coloring aluminum, plain carbon steel, titanium, and magnesium. At present a glare-reducing black matte finish (a color not available with other metal-coloring methods) is the single color being commercially produced. The first use of black stainless steel curtain walls is being made at Atlas Steel's new head office building at Welland, Ontario; and black stainless steel spandrel panels and column covers will be used on the 52-story Union Carbide building now under construction in New York City. The company, however, does not intend to continue production of the colored metal sheet, but will license the process to the trade on a nonexclusive basis.

Manufacturer: Electro Metallurgical Co., 30 E. 42nd St., New York, N.Y.

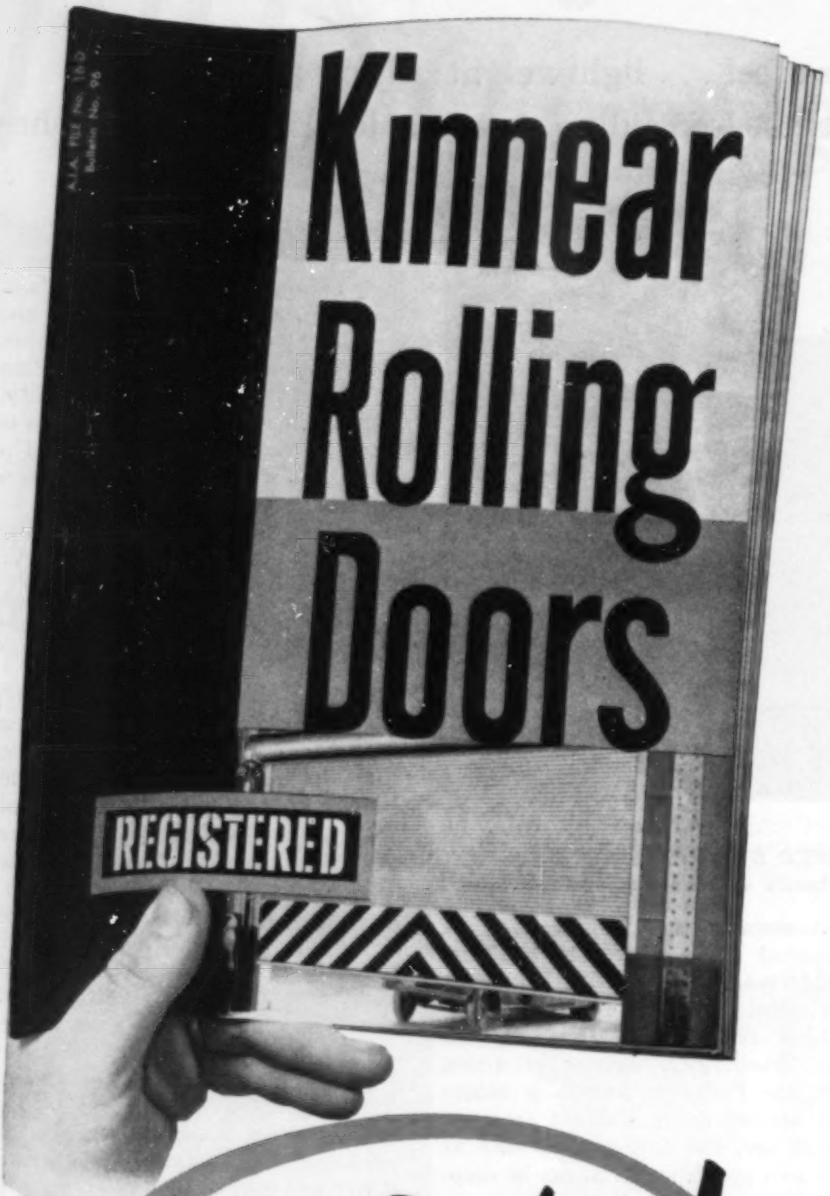
SOUNDPROOFING PANEL is thick, but light in weight

The glass-fiber acoustical ceiling panel shown below, called *Acoustiglas*, weighs only 0.19 pounds per square foot and is therefore one of the lightest-weight, incombustible soundproofing materials on the market. Designed specifically for grid suspension mounting (see photo), 1¼ inch thick *Acoustiglas* panels have a high thermal resistance, a noise reduction coefficient of 90 per cent, and a light reflectivity of 89 per cent (the exposed surface of each panel is finished with a vinyl-base, flame-resistant white paint). Both outer surfaces of the panels are dense and rigid, while the center portion is porous and lightweight. Over-all density: 1½ pounds per cubic foot. *Acoustiglas* panels may be vacuumed and repainted. Panel sizes: 2 by 2 feet and 2 by 4 feet. Prices have yet to be announced.

Manufacturer: L.O.F. Glass Fibers Co., 1810 Madison St., Toledo, Ohio.

continued on page 140

Easy to install (or remove, for behind-the-ceiling repairs), flexible glass-fiber panels are simply sprung into a gird framing system where they lie rigid without binding.



Get Action!

—The *upward action of interlocking slats that coil compactly above the opening:* That's the *action* (originated by Kinnear!) that provides an unbeatable combination of lower door costs and higher door efficiency. Kinnear Rolling Doors make all space around doorways usable at all times, open completely out of the way, give you a rugged curtain of all-steel protection against wind, weather, fire, and vandals. *Often* delivering up to 50 years or more of daily, low-maintenance service, they're also REGISTERED — all parts of every door can always be accurately duplicated from master details kept permanently in fireproof vaults. Get *all* these Kinnear Rolling Door benefits and more; write for this latest catalog, now . . Take Action!

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Offices and Agents in All Principal Cities
FACTORIES:
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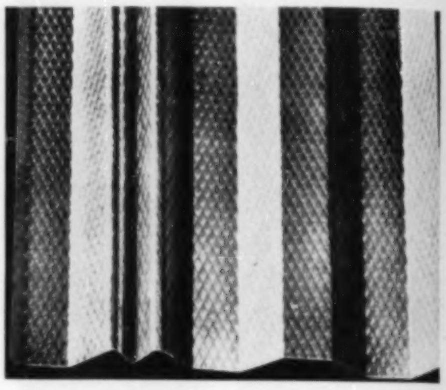
KINNEAR
ROLLING DOORS
Saving Ways in Doorways

ALUMINUM SIDING SHEET
patterned to increase strength

Flat corrugations in combination with an embossed diamond pattern give Kaiser Aluminum's new lightweight (0.021 gauge) roofing and siding sheet a more attractive look (the diamond pattern reduces glare appreciably) and a load-bearing strength said to be 30 per cent greater than in patterned corrugated aluminum covering materials of comparable weight and thickness.



Trade-named *Diamond-Rib,* the siding comes in 50 inch widths which provide a full 48 inch coverage after lapping. Lengths range from 6 through 16 feet. Rib configurations are 9/16 of an inch deep with a pitch of 2½ inches. Cost: about 18½ cents a square foot.

Manufacturer: Kaiser Aluminum & Chemical Sales Inc., 919 North Michigan Ave., Chicago 11, Ill.

CLEAR WOOD FINISH
improves wear, reduces maintenance

Evergrain, a new wood finish developed by U.S. Plywood, is a hard, clear resin overlay factory-applied to doors and panels as a long-life protection against digs, scrapes, and weather exposure. Described by the manufacturer as an invisible armor far superior to conventional paints, lacquers, and varnishes, the finish is reportedly unaffected by age, temperature extremes, moisture, and dryness. Maintenance of fine-grained woods is reduced to a minimum and surface scratches can be eliminated with a conventional automobile

cleaner. Cost: about 35 cents a square foot—or roughly half the cost of high-pressure laminates.

Manufacturer: U.S. Plywood Corp., 55 W. 44th St., New York 36, N. Y.

WOOD FINISHING PROCESS eliminates hand sanding and sealing

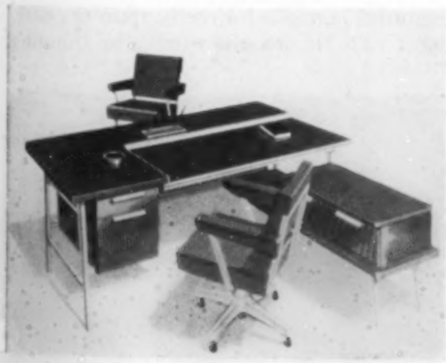
Super Microseal is a new machine process that imparts a smooth, tough surface to any type of wood. Unlike the overlay described above, this is an integral wood finish. It is expected to cut finishing costs for doors, furniture parts, and architectural panels at least 75 per cent in that it eliminates three time- and labor-consuming operations usually done by hand: sanding, priming, and sealing. (According to the manufacturer, labor and materials required to finish a conventional flush door cost about $4.50, while a *Microsealed* door selling for about 60 cents extra can be immediately varnished, stained, or painted in the field for roughly $1.25.)

Developed by Satin Surfaces Inc., the process, which is neither a film nor an overlay, uses pressure and friction to melt a natural plastic (lignin) in the wood's surface. This plastic is then blended, chemically and physically, with a special synthetic resin to form a mar-resistant, glossy (or dull), 1/24 inch surface that is actually part of the wood. The process is also said to eliminate grain and fiber raising and variations in surface texture, while producing a finish far smoother than the most careful sanding. *Microseal* cost per square foot: about ½ cent.

Manufacturer: Satin Surfaces Inc., Box 1403, Louissville, Ky.

METAL OFFICE FURNITURE styled for executive settings

With the advent of *Italic Styling,* the newly designed office furniture being introduced by the General Fireproofing Co., metal desks and chairs have taken on a colorful, contemporary look. More than 72 different pieces are included in the line which is finished in a variety of materials (aluminum, steel, high-pressure laminates, leather), fabrics, and colors used in tasteful combinations. Prices for the group have yet to be announced but will be, ac-



continued on page 142

applications unlimited!

Margaret R. Read, M.D.
Physician's Suite — waiting room, X-ray room, office and examining rooms.
Architect: John T. Kelly, Cleveland
Equipment by: The Wakefield Company
Using FLAT Soundsheet 3' x 3' squares framed under tension

Tufts University, Bray Mechanical Engineering Lab
Architects: William A. Pollack, NEGEA SERVICE CORP., Cambridge, Mass.
Equipment by: Smithcraft Lighting
Using CORRUGATED Soundsheet on 2 ft. centers.

TWA Reservations Office, Boston.
Architect: Thomas F. McDonough, Boston
Equipment by: Luminous Ceilings, Inc. Office, Boston
Using CORRUGATED Soundsheet in 3 ft. modules

CONTREX

SOUNDSHEET

TRANSLUCENT ACOUSTICAL ELEMENT — ONLY Soundsheet successfully combines acoustical and light diffusing properties! Today's important new architectural tool, Contrex Soundsheet can be used effectively with most wall-to-wall or area lighting systems for remodelling or new construction. Available from coast to coast through the nation's leading manufacturers of lighting and acoustical equipment, Soundsheet can also replace or supplement other acoustical or lighting media now installed.

Because of Soundsheet's unique versatility, many applications are being developed, such as functional sound absorbers, back-lighted wall treatments, duct-lining to reduce sound . . . and space dividers. Also it can be produced to equipment manufacturer's specifications in patterns and COLOR, translucent or opaque.

- *Easy to install*
- *Balanced sound absorption*
- *Softly diffused lighting free of shadows and reflections*
- *Washable*
- *Harmonizes perfectly with any of today's architectural interior concepts*
- *Available in FLAT or CORRUGATED sheets*
- *U.L. listed*

WRITE today for more information about the many advantages — the many applications for Soundsheet and how they can benefit you.

"SOUNDSHEET . . . *for new ideas in sound and sight*"

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I'm interested in Soundsheet
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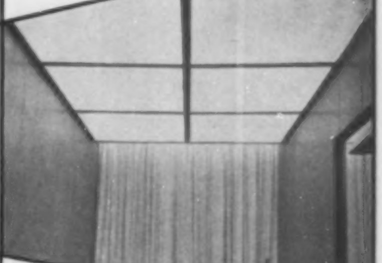
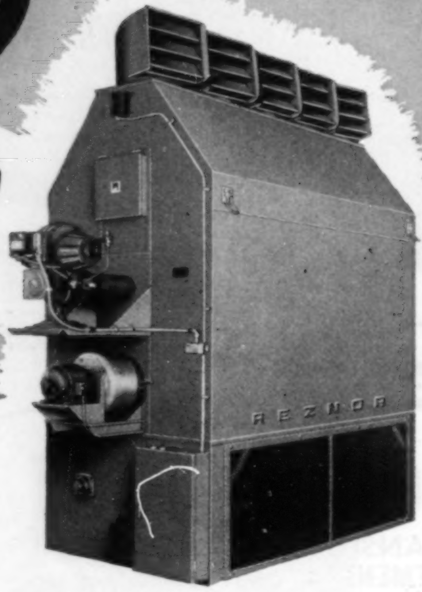
AVAILABLE FROM COAST TO COAST THROUGH AUTHORIZED MANUFACTURERS OF LIGHTING AND ACOUSTICAL PRODUCTS.



Here's the answer to your

BIG SPACE HEATING PROBLEMS

Reznor-Olson
STAINLESS STEEL
DIRECT FIRED
HEATERS



These units are designed for heating factories, warehouses, garages, airplane hangars, gymnasiums and other large open areas. They pick cold air up off the floor, distribute heated air overhead at high velocity—either direct or thru ducts. In addition to space heating installations, Reznor-Olson heaters are well-suited for use in make-up air systems and in drying and other process applications.

Reznor-Olson heaters are available in ten sizes — 400,000 to 2,000,000 Btu — with gas, oil or dual-fuel burners. They may be floor mounted for top discharge or suspended for down-blast or horizontal discharge.

New Bulletin gives Complete Specifications

Complete specification information — including dimensions, control details, temperature rise, air delivery and fuel consumption — is included in a new bulletin, F-57A-RO. If you don't have a copy of this bulletin in your files, just fill out and mail the coupon below. Do it today.

Reznor-Olson
STAINLESS STEEL
DIRECT FIRED HEATERS

REZNOR
WORLD'S LARGEST-SELLING DIRECT-FIRED
UNIT HEATERS
Reznor Manufacturing Company, 40 Union St., Mercer, Pa.

Please send me a copy of your bulletin F-57A-RO which gives complete specification data and construction details on Reznor-Olson direct fired heaters.

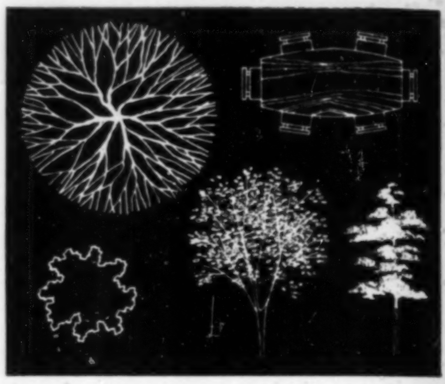
Name____________________
Company____________________
Street____________________
City__________ Zone_____ State_____

cording to the manufacturer, competitive with other "high-style" metal furniture now on the market.

Manufacturer: General Fireproofing Co., E. Denik Ave., Youngstown, Ohio.

ARCHITECTS' STAMPS speed preparation of floor plans

Remarkably clean, clear "renderings" of more than 200 engineering and architectural symbols—shrubbery, furniture, room titles, figures, automobiles, directional arrows—can now be stamped, instead of drawn, onto floor plans or sketches with



a new series of rubber stamps. Designed as time-saving tools for architects, draftsmen, and engineers, the stamps sell for $1.75 to $2.00 each.

Manufacturer: Design Specialties Inc., 117½ W. Church St., Champaign, Ill.

RUBBERY SEALER TAPE simplifies curtain-wall glazing

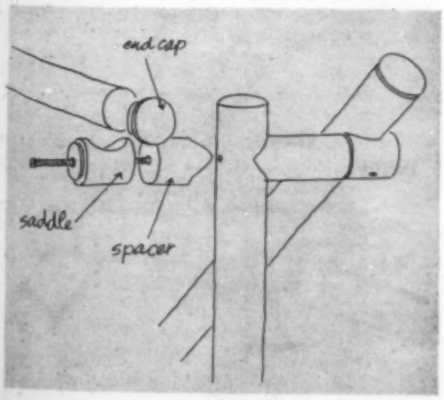
Catering to the ever increasing need for effective and easy-to-apply curtain wall sealants, Pittsburgh Plate Glass has developed a new vulcanized, butyl-base tape for bonding glass to glass, glass to metal, and metal to metal. Trade-named *1072 Butene Sealing Tape,* this rubbery black material is applied directly from the packaged roll. No job site mixing or thinning,

no special tools, no masking of sash or glass areas, and no postsealing clean-ups are necessary. In addition, according to the manufacturer, the glazier, when using this tight-sticking material, can see that the sealant is continuously positioned prior to incasing the glass edge with sash stops. Ten years of extensive testing indicate that the tape's elastic and resilient properties provide durable, weather-tight seals that absorb expansion, contraction, vibration, and wind loads. Tape sizes range from 1/16 by ¼ inch to ⅜ by ½ inch in roll lengths up to 100 feet. Cost: about 28 cents a running foot, subject to quantity discounts.

Manufacturer: Pittsburgh Plate Glass Co., 632 Fort Duquesne Blvd., Pittsburgh 22, Pa.

FLEXIBLE RAILING JOINTS
ease hand-rail installation

A new set of ready-made fittings makes this highly flexible hand-rail system automatically adjustable to dimensional variations in floors and stairways. It eliminates the need for detail design, templates, and prefabrication, and permits a finished job, started and completed on the job site, with little or no scrap or waste, and no welding. To construct a hand rail a set of three fittings (saddle, spacer, and end cap) are tap screwed into standard aluminum or iron pipe—one set for every 4 feet of single rail. Tools required for installation: hacksaw, drill, and screwdriver. In contrast to conventional welded railings, sections can be easily removed and stored for future use when no longer needed. Fittings are available in 1¼ inch and 1½ inch diameters, in both galvanized malleable iron and aluminum. Prices for 1¼-inch fitting set: $2.70 in iron, $4.50 in aluminum; 1½-inch fittings in both materials run slightly higher.



Manufacturer: Universal Railing Co., 275 Kalamath St., Denver 23, Col.

RUBBER TACKBOARD
makes tack removal easy

Armstrong Cork Co. has announced the development of a flexible foam rubber tack-

continued on page 144

At
the
Hotel
Monteleone . . .

Unitslide Wall at Hotel Monteleone, New Orleans, La. Wogan & Bernard, Architects

New Potentials for Public Rooms

thru Fairhurst® UNITSLIDE® WALLS

Two areas — the Coffee Shop and new Swan Room—now do the work of three. Separated only by a Fairhurst Unitslide Wall, each room may be used alone or simultaneously. Or, Unitslide may be recessed to create one integrated area suitable for large banquets or meetings. Here is maximum use of space — gauged to take advantage of peak guest loads, yet easily changed when needed.

Unitslide is composed of separate units that lock to form a solid, rigid wall; more resistant to sound than any other type. Specially designed pockets completely conceal the entire wall when not in use. And Unitslide is versatile! Note here the distinctive louvered effect: inspired by the Old South, though modern as next year's Mardi Gras . . . Fairhurst can be of help with your space problems

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LIGHT YOUR WAY TO PROMINENCE!

● Lumenated Ceilings by Thermotank are the newest means of streamlined lighting. Cover pipes, ducts, conduits, and provide shadowless, glare-proof light diffusion.

Low cost, easy installation! Used in the most modern buildings, offices, and airports.

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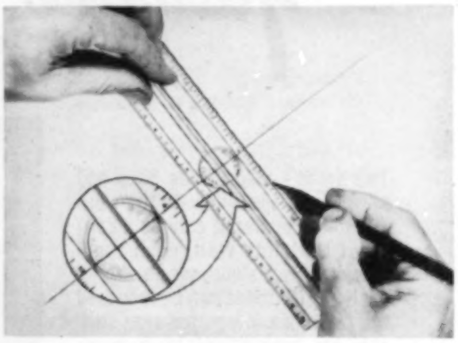
board material designed for use in schools and offices. The new material—called *Cushion-Eze*—is a specially treated hard foam rubber surface backed by standard foam rubber that can be easily depressed with slight finger pressure to facilitate tack removal. In addition, *Cushion-Eze* is reportedly three times lighter in weight and three times more sound absorbent than conventional composition-cork tackboards. Its unusual flexibility also makes *Cushion-Eze* easy to install and eliminates the possibility of its cracking, even when folded double. Available in continuous rolls 48 and 72 inches wide, Cushion-Eze is ¼ inch thick, and is applied with a special mastic sealer to any solid wall or to an untempered pressed wood backing. Prices have not yet been announced, but, according to the manufacturer, will be competitive with those of other tackboard materials.

Manufacturer: Armstrong Cork Co., 104 Sixth St., Lancaster, Pa.

INGENIOUS RULER
has prism for drawing right angles

With the *Ruler Square,* an 8 inch plastic ruler that has a clear plastic prism running full length along its top, a 90-degree angle can be drawn without using triangle or T square. The ruler works this way: when the *Ruler Square* is at an angle other than 90 degrees to the line under it, this line as seen through the prism appears broken; when the ruler square is at right angles, the line appears straight. Highly practical for quick office sketches and field work, the ingenious device sells for 75 cents.



Manufacturer: Kiva Products Inc., 550 Hill Ave., Glen Ellyn, Ill.

MARBLE SPRAY
seals out dirt and stains

Marble, a highly porous stain-susceptible material, can now be protected against dirt and moisture penetration by a new spray-sealant called *Tri-Seal.* Developed by the Vermont Marble Co., *Tri-Seal* permeates surface pores and expands on drying, to fill them with a hard, clear, colorless finish. An 11 ounce pressure can, enough to effectively protect about 75 square feet, sells for $3.95.

Manufacturer: Vermont Marble Co., Proctor, Vermont.

KELLOGG
dial "9"
intercom

a NEW *way to cut communication costs for your clients...*

Is yours a small business? A medium size organization? If yes, Kellogg's Dial 9 Intercom is made for you. Dial 9 is generous with its services, but miserly about spending your money. In fact, for pennies a day, Kellogg's budget-minded intercom brings up to nine persons or departments within touch instantly . . . without leaving their desks or stations! Consider these points in favor of Kellogg Dial 9: low initial cost . . . reduces need for rental equipment . . . completely bypasses switchboard and operator . . . leaves outside lines free for doing business . . . Kellogg's exclusive warranty. *Write* today.

- Fast, dependable 24-hour telephone service between all departments and persons—without the need of a switchboard operator!
- Easy to install—and, the most modern Kellogg K500 commercial-quality telephone instruments are used. Choice of nine decorator colors!
- Designed to grow with your business by adding extra equipment later, without loss of initial investment!
- Compact engineering requires less than a foot of space for the "brains" of the system!

Where larger systems are required, ask for facts on Kellogg Select-O-Phone, KMG or K1A1

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MULTIPURPOSE TOOL
sets fasteners and drills concrete

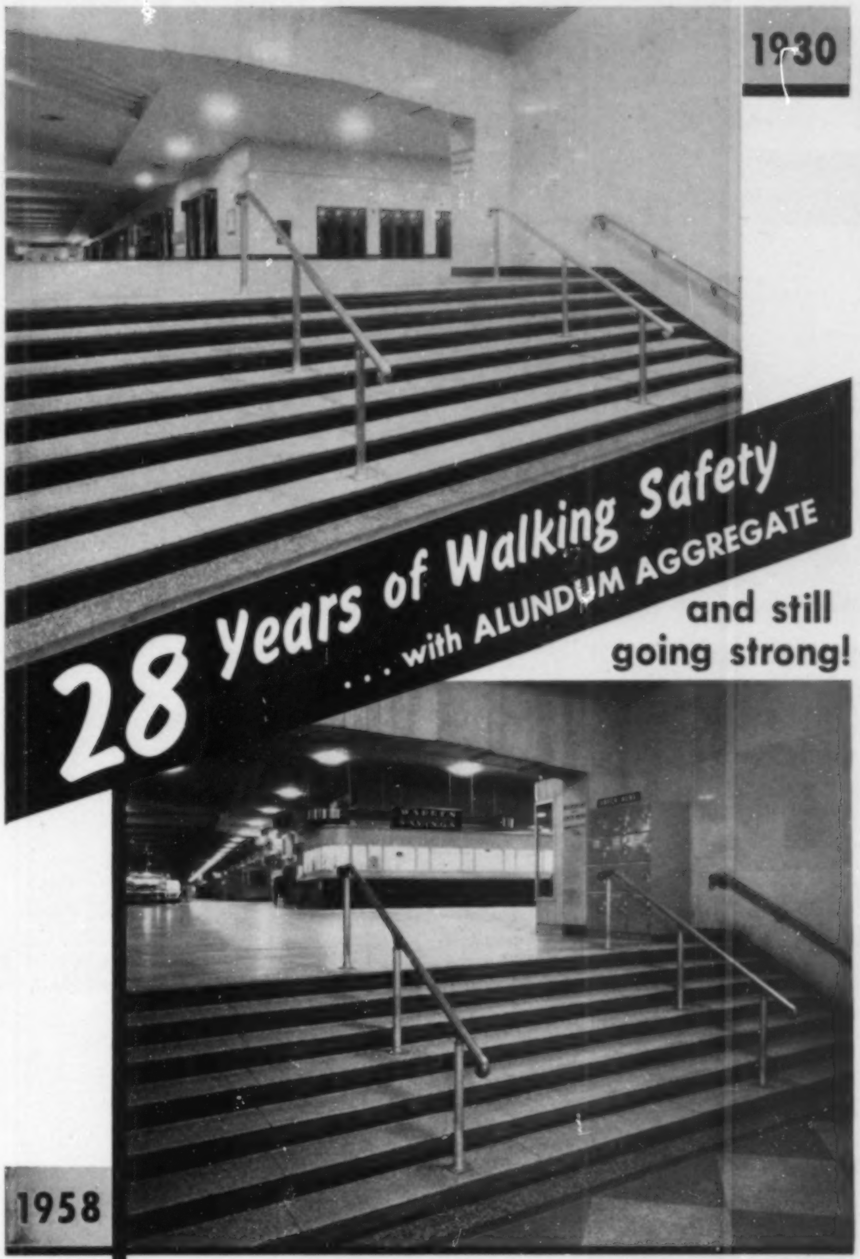
The *Sure-Set R-360*, here being used as a drill, is also designed for hammer-in fastening work, thereby eliminating one tool from the workman's kit. To convert the new tool, the drill bit is removed and replaced with a fastener which can be driven directly into such hard materials as concrete, cinder block, mortar, or thin steel. Priced at $12.95, the *Sure-Set* weighs one pound and sets studs as well as non-threaded fasteners.

Manufacturer: Ramset Fastening Systems, 12117 Berea Rd., Cleveland, Ohio.

MIDGET DITCHER
marketed for fast, light yardwork

The *Model C Ditch Witch*, a bantam-sized trenching machine for installing underground wiring, lawn sprinkler systems, water lines, etc., is powered by a 7 horsepower air-cooled gasoline engine and digs a 3, 4½, or 6 inch trench to depths up to 2 feet. Trenching speed: about 4 feet per minute. Completely mobile and self-powered, the machine is easily handled by one man, is small enough (width: 3 feet, 4 inches) to go through standard yard gates, and is reportedly light enough (600 pounds) not to damage turf. Cost: $625.

Manufacturer: Charles Machine Works Inc., 608 Birch St., Perry, Okla. END



Atlantic Avenue Entrance
South Station, Boston, Mass.

South Station, Boston is one of the country's busiest railroad terminals. Countless thousands upon thousands of travelers and commuters have gone in and out of this Atlantic Avenue entrance since these precast ALUNDUM Aggregate treads were made and installed 28 years ago by the DePaoli Mosaic Company. Their surface has not lost one iota of its non-slip effectiveness and wear has been insignificant as you can see by this unretouched photograph taken in April of this year.

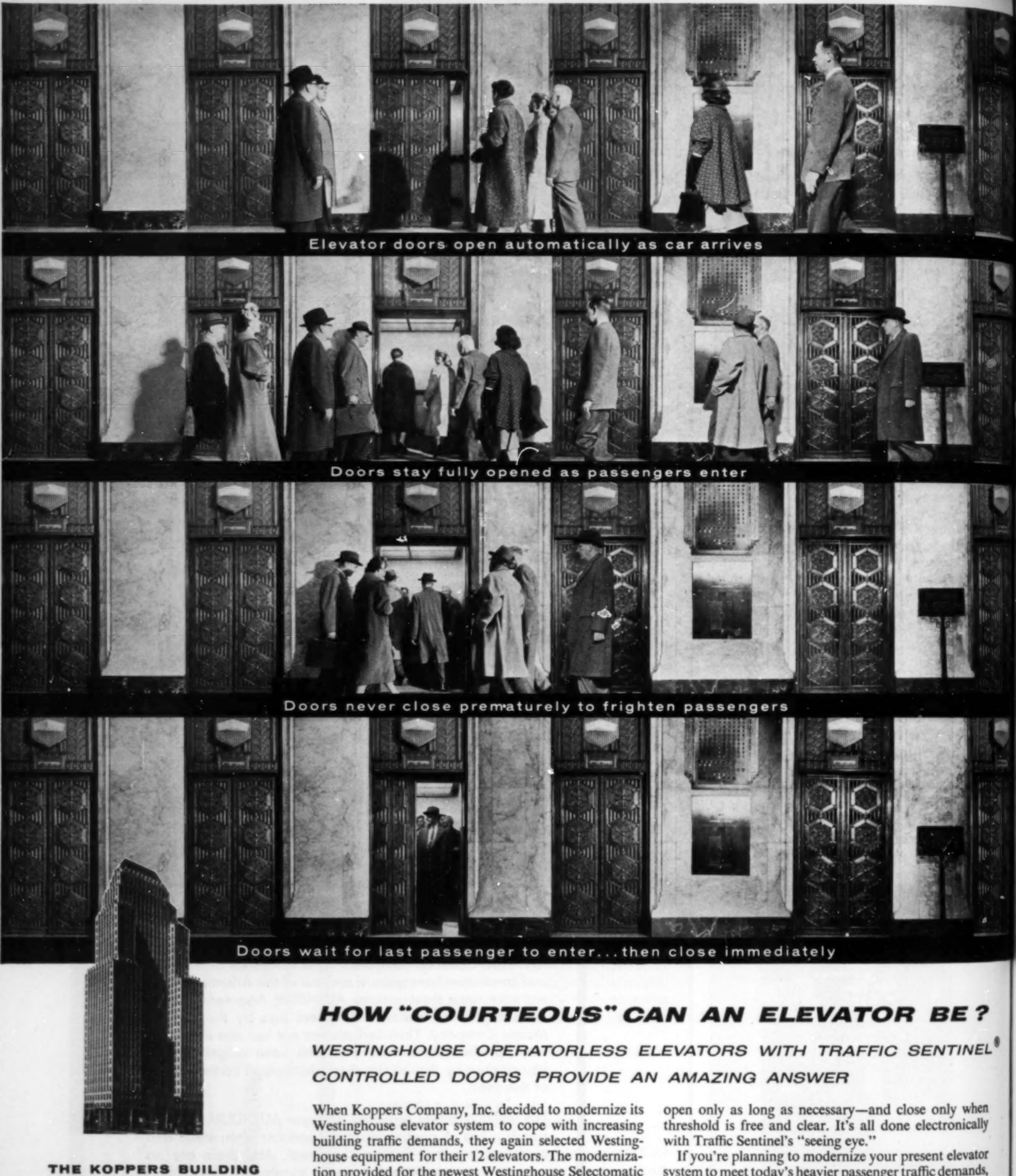
The walking safety provided by these ALUNDUM terrazzo treads is just as positive in stormy weather when water and snow are tracked in from the street. And there are no grooves nor corrugations to cause tripping.

Catalog 1935F gives complete details about ALUNDUM Aggregate for terrazzo and cement — also in SWEETS.

NORTON
NON-SLIP FLOORS

NORTON COMPANY
WORCESTER 6, MASS.

ALUNDUM AGGREGATE for Terrazzo and Cement • ALUNDUM STAIR and FLOOR TILE



Elevator doors open automatically as car arrives

Doors stay fully opened as passengers enter

Doors never close prematurely to frighten passengers

Doors wait for last passenger to enter... then close immediately

THE KOPPERS BUILDING IN PITTSBURGH, PENNA. modernized its elevators which were installed in 1929 with Selectomatic *operatorless* elevators and Traffic Sentinel controlled doors. When in Pittsburgh, test ride these remarkably *smooth* Westinghouse elevators—and observe Traffic Sentinel in action.

HOW "COURTEOUS" CAN AN ELEVATOR BE?

WESTINGHOUSE OPERATORLESS ELEVATORS WITH TRAFFIC SENTINEL® CONTROLLED DOORS PROVIDE AN AMAZING ANSWER

When Koppers Company, Inc. decided to modernize its Westinghouse elevator system to cope with increasing building traffic demands, they again selected Westinghouse equipment for their 12 elevators. The modernization provided for the newest Westinghouse Selectomatic *operatorless* elevators, as well as electronically controlled Traffic Sentinel doors.

Why *operatorless* elevators?—because operating costs are cut as much as *$7,000 per car per year.*

Why Traffic Sentinel Doors?—because these are the most courteous elevator doors in the world. They work *for* passengers, not against them. They never "snap" at or frighten people. Door opening and closing is controlled entirely by passenger movement. Doors remain open only as long as necessary—and close only when threshold is free and clear. It's all done electronically with Traffic Sentinel's "seeing eye."

If you're planning to modernize your present elevator system to meet today's heavier passenger traffic demands, the people to talk to are in your nearest Westinghouse Elevator Division office. They'll help you with any elevatoring problem relating to modernization or new building installations.

YOU CAN BE **SURE**...IF IT'S

Westinghouse

WESTINGHOUSE ELEVATORS AND ELECTRIC STAIRWAYS

Hotel Americana is owned and operated by Tisch Hotels, Inc., Morris Lapidus and Leo Kornblath, Designers and Architects; Taylor Construction Company, Miami, General Contractors; Markowitz Bros., Inc., Mechanical Contractors; George O'Mara, Mechanical Engineer. Boiler-burner units installed by Florida Fuel Oil Co., Miami. This luxurious hotel is located in the Bal Harbour section of Miami Beach, Florida.

Petro oil burners are chosen where only the finest can compete

What can a hotel achieve in luxurious living if its designers are allowed to apply the full resources of modern technology and art?

The answer can be found in the new Hotel Americana on the "Gold Coast" of Florida. This "Gateway to the Americas" can well be described as a small city of incredible beauty, graciousness and comfort. Its 475 spacious guest rooms and suites include 30 Lanai apartments, each with its own tropical garden, private entrance and patio. There is a whole series of fine restaurants and supper clubs, lounges and shops, and an Olympic-size pool surrounded by cabanas and recreation areas.

Petro-powered heating plant

The enormous steam and hot water requirements of this lavish community are supplied by three boilers, fired by Petro rotary oil burners—chosen for their proved dependability. Petro burners are famed for their trouble-free firing of low cost heavy oils, and for their low maintenance costs. Models are also available for dual-fuel gas or oil firing.

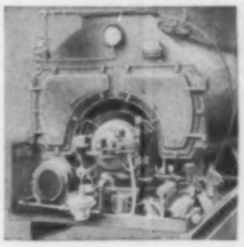
For full information, please mail coupon.

Among the luxury hotels in the Miami area using Petro burners are:

- Hotel Americana
- Hotel Fontainebleau
- Versailles
- Deauville
- Dupont Plaza

Petro boiler-burner unit—a complete package, ready to go.

Includes Scotch boiler with forced draft firing system for oil, gas or gas-oil. Mounted on steel skids, with fuel, air and control systems installed and tested at factory. Requires little more than service connections.



PETRO, 3214 West 106th Street, Cleveland 11, Ohio
(In Canada, write to 80 Ward Street, Toronto, Ontario)

Please send catalog and specifications on Petro gas and oil firing units.

Name________________

Company________________

Address________________

City________ Zone____ State____

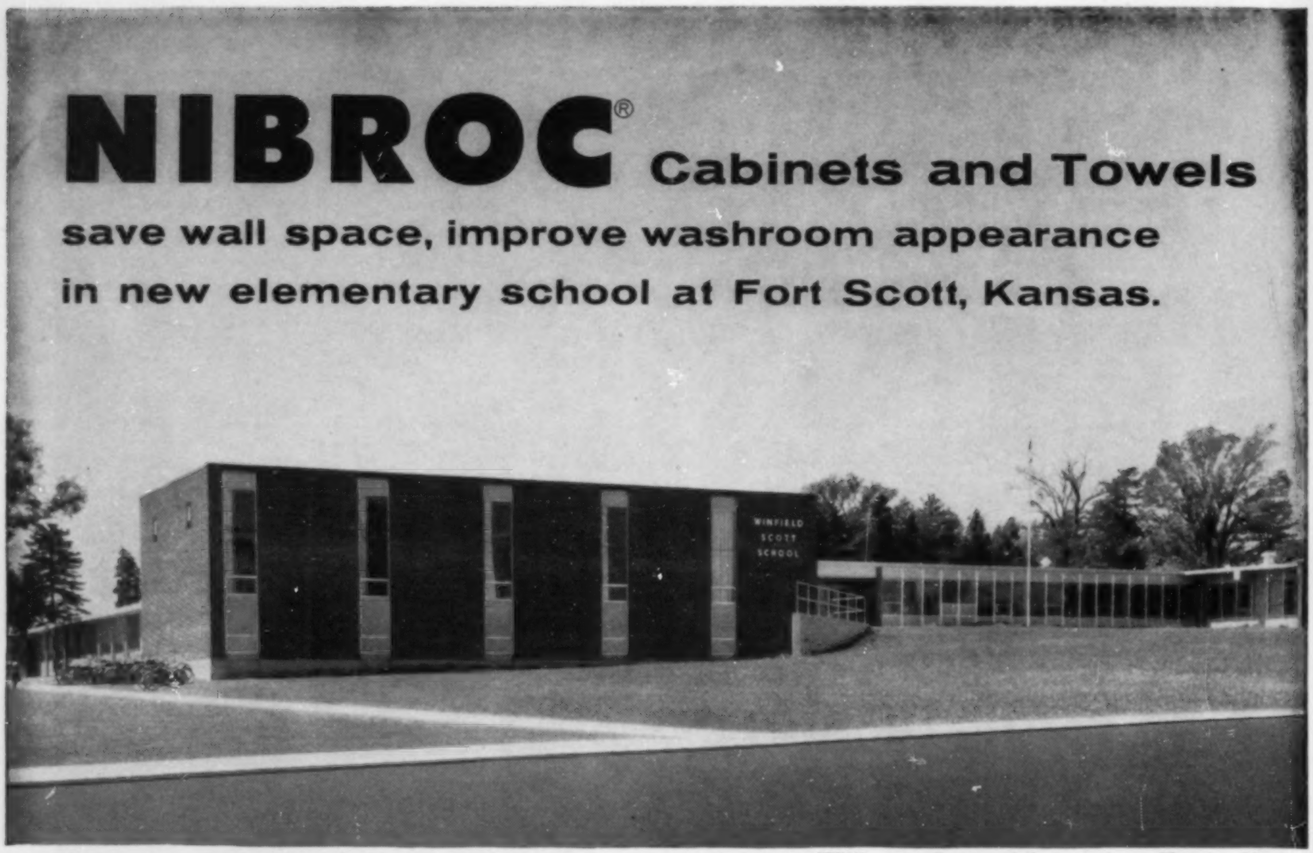
PETRO

T.M. REG. U.S. PAT. OFF.

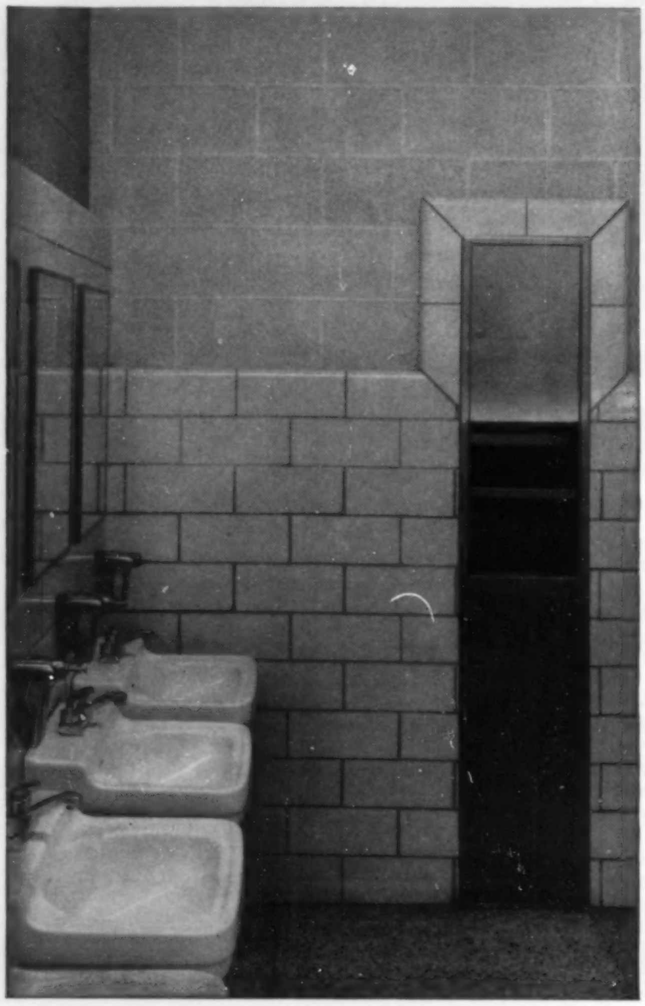
Makers of quality heating equipment for over 50 years

NIBROC® Cabinets and Towels

save wall space, improve washroom appearance in new elementary school at Fort Scott, Kansas.



ARCHITECTS: Williamson-Loebsack & Associates, Topeka, Kansas



"NIBROC's new recessed cabinet dispenser with receptacle has found much favor with our staff because it saves precious and expensive floor space and improves washroom appearance. It is simple and inexpensive to install and trouble-free," writes Victor H. Loebsack, Architect.

NIBROC RECESSED DISPENSERS load faster, hold more towels; are handsomely constructed of 22-gauge stainless steel. Dispenser and waste receptacle obtainable separately, for staggered installation. Wall cabinets available in white enamel, chromium plate or stainless steel.

NIBROC TOWELS—with perfect balance in absorbency, strength and softness—reduce waste and cut costs.

IT WILL PAY YOU to specify *Nibroc* Cabinets and *Nibroc* Towels when planning your next building. Look in the Yellow Pages under Paper Towels for nearest distributor. Or write Dept.UN6, Boston.

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SEE SWEETS CATALOG for information about Nibroc Cabinets—wall, floor model and recessed.

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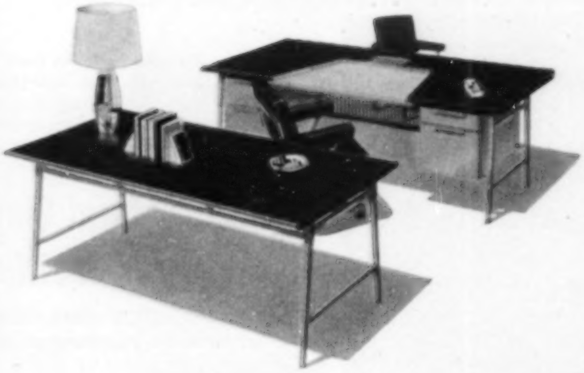

This magnificent furniture, the focal point of Italic Styling, opens new avenues of creativity to the designers and decorators of business interiors through its superb design, unlimited flexibility and broad selection of colors, materials and finishes.

To learn the full significance of Italic Styling in the furnishing and decorating of executive quarters, write for your full-color Italic Styling brochure.
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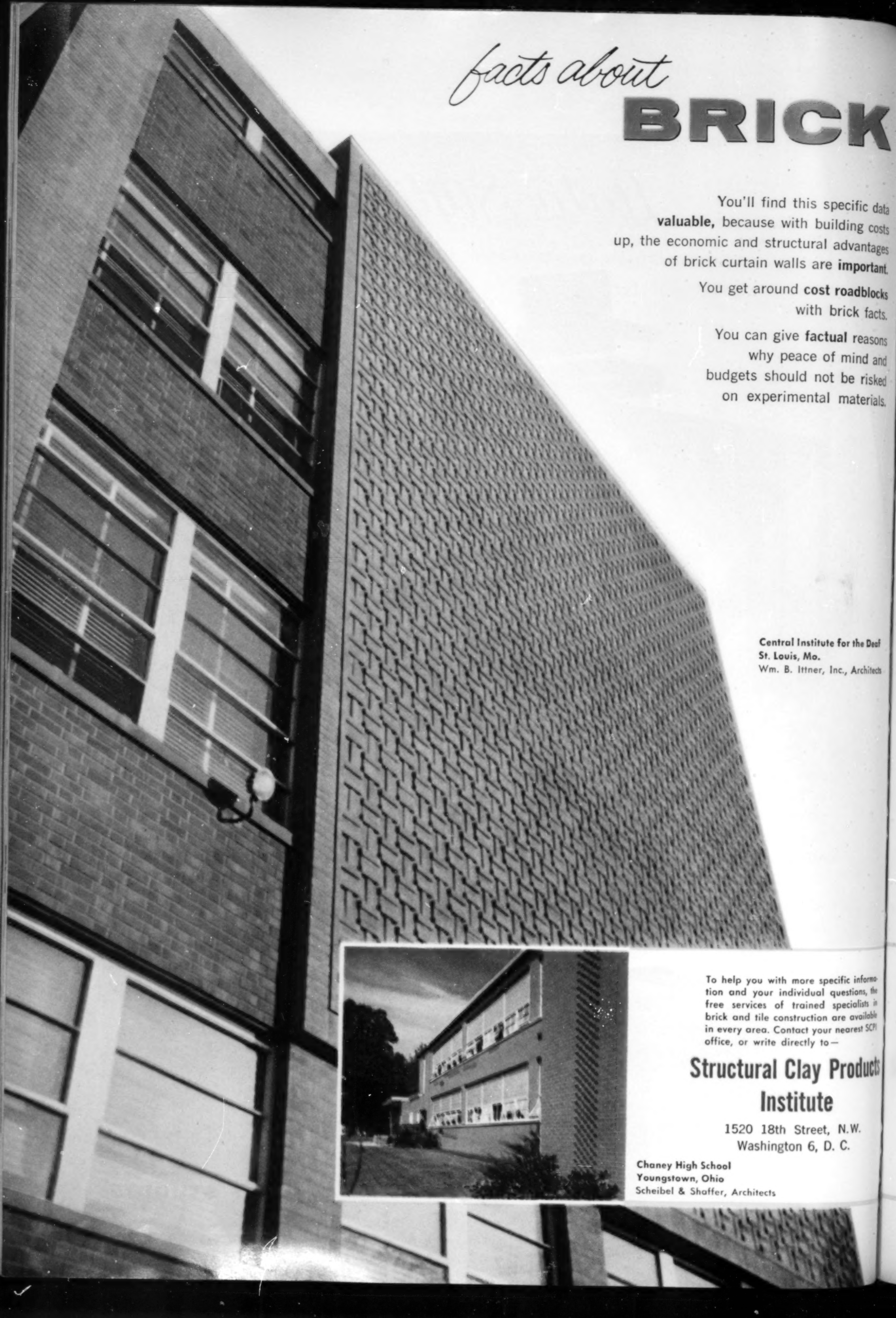

facts about

BRICK

You'll find this specific data **valuable,** because with building costs up, the economic and structural advantages of brick curtain walls are **important.**

You get around **cost roadblocks** with brick facts.

You can give **factual** reasons why peace of mind and budgets should not be risked on experimental materials.

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To help you with more specific information and your individual questions, the free services of trained specialists in brick and tile construction are available in every area. Contact your nearest SCPI office, or write directly to—

Structural Clay Products Institute

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Washington 6, D. C.

Chaney High School
Youngstown, Ohio
Scheibel & Shaffer, Architects

CURTAIN WALLS

Like many architects, you probably prefer to work with time-tested brick. You appreciate its natural esthetic graciousness . . . rich textures and versatility.

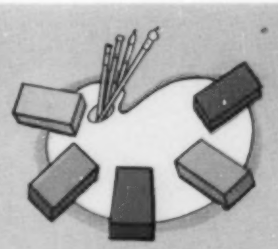
So for your file on curtain walls —here is a handy summary of the **10 Indisputable Benefits of Brick.**

SOUND INSULATION

Noise reduction is proportional to the logarithm of the unit weight of the wall.

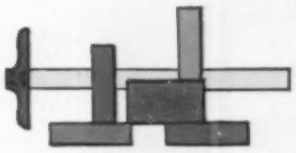
INITIAL COST

Average clay masonry $2.30 psf. Metal skin $6 psf.



COLOR AND TEXTURE

Modern clay masonry is available in unlimited colors, textures, glazes and forms.

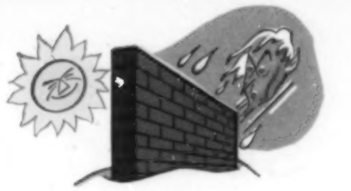


DESIGN FLEXIBILITY

Flexible, adaptive structural clay units encourage individuality. Creativity finds expression in naturally colorful materials with unlimited textures or ceramic glazes.

MAINTENANCE

Brick stands up. "You don't have to hire maintenance crews the day you occupy."

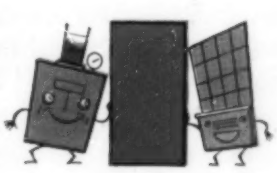


WEATHER RESISTANCE

Properly built clay masonry offers a complete barrier to water, air, snow and dust penetration.

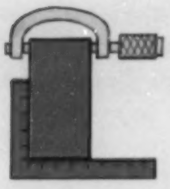
INSURANCE

In practically all areas brick masonry enjoys lower insurance rates, as well as building code advantages.



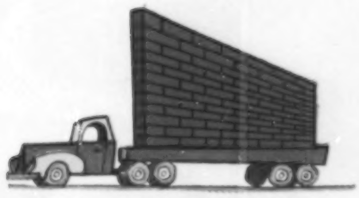
HEATING AND AIR CONDITIONING

The capacity insulation feature of clay masonry gives lower air conditioning costs than other walls having the same "U" value.



DIMENSIONAL STABILITY

Clay masonry is the most dimensionally stable exterior wall material. Won't warp, shrink or bend.



PREFABRICATION

Clay masonry is available in prefabricated units.

Tectum® *a new dimension in Roof Deck Construction*

Building: National Lock Co., Rockford, Ill.
Architect: Ragnor-Benson, Inc.

sound conditioning

The steady hum of motors, machines and mechanical vibrations can be greatly lessened when "sound bounce" is reduced. Tectum roof decks absorb sound as much as 85% for 3" material making busy plants more comfortable—better places in which to work. Tectum panels over exposed joist or beam makes an attractive interior ceiling without need for further finishing. Wood-toned, textured pattern is both attractive and durable; goes down fast, saves time and labor charges during erection. Tectum is now available in greater quantities than ever before. Ask for a complete file on Tectum for roof decks, sidewall and acoustical suspended ceiling usage, or see Sweets Architectural and Industrial Files.

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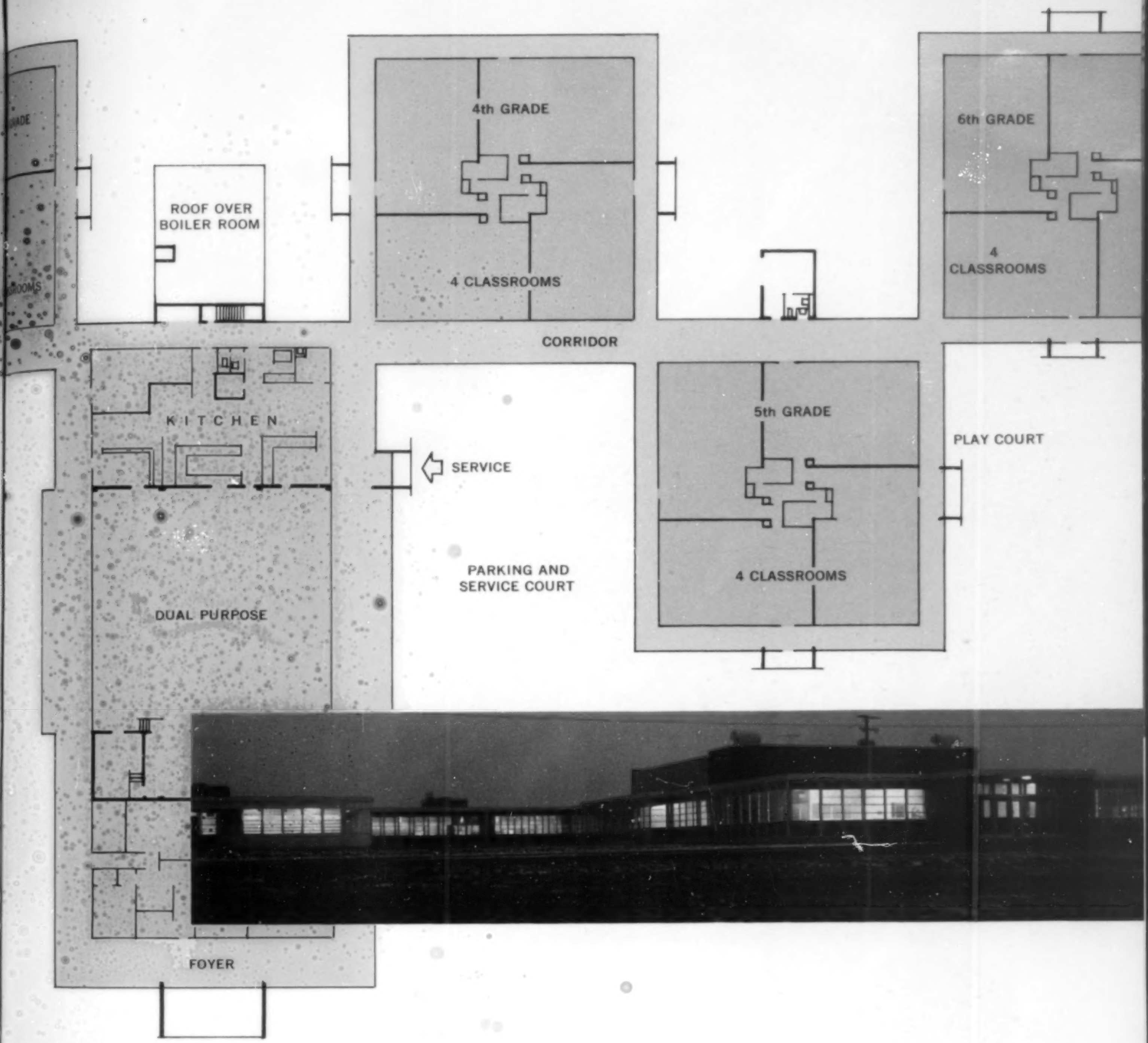

ROOF OVER BOILER ROOM
4th GRADE
4 CLASSROOMS
6th GRADE
4 CLASSROOMS
CORRIDOR
KITCHEN
SERVICE
PARKING AND SERVICE COURT
5th GRADE
4 CLASSROOMS
PLAY COURT
DUAL PURPOSE
FOYER

An on-the-spot L·O·F Investigation of a

School designed for separation of **Age Groups**

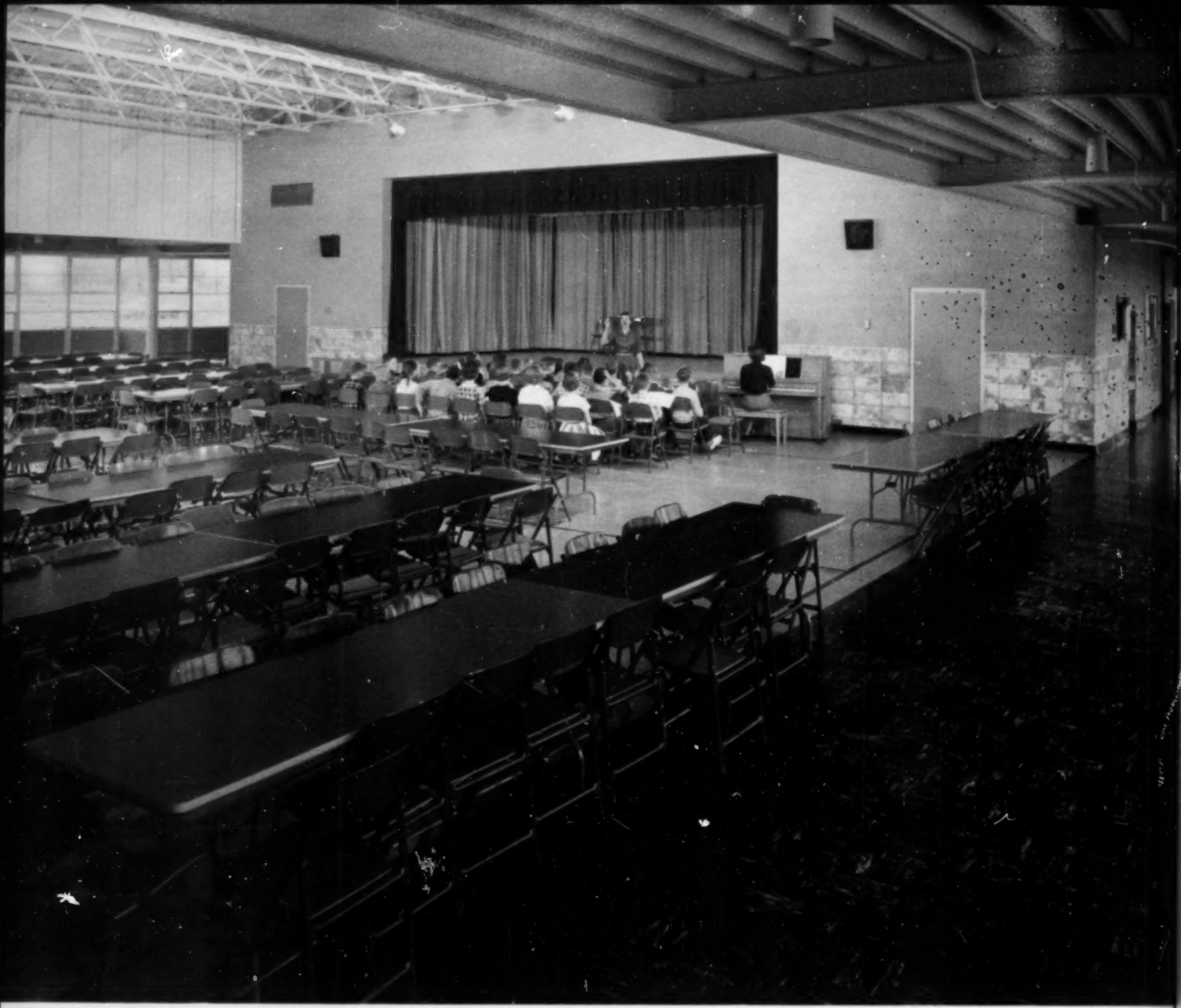
How can you put 800 kids (from 1st through 6th grades) under one roof and give each age group a "private school" atmosphere on a building budget of only $570,000?

Architects Zeller and Hunter of Springfield, Ohio, accomplished just that for the new 45,180 sq. ft. Northwestern Elementary School in the same city. Cost: only $12.41 per sq. ft. (other new schools in the area averaged from $12.50 to $15 per sq. ft.).

L·O·F men went to Springfield to find out from the people who are an every-day part of the school, how its unique design is working out.

Here is what they told us:

L O F GLASS



Children are routed from classroom units to the auditorium-cafeteria through corridors of glass. When used for civic functions, the public enters from the street through the school's main entrance.

R. O. BRINKMAN
Executive Head
Northwestern Local Schools

"The layout is wonderful! The six, four-classroom units are placed like checkerboard squares, radiating from a central administration-auditorium and cafeteria core. Each age group has a unit. Each unit has its own identifying exterior color styling, its own toilet facilities and its own playground. So first graders, for example, are never thrown with the bigger, more boisterous, children. And the sixth graders never have the small ones underfoot.

"Each unit is surrounded by a glass-walled corridor, six feet wide, connected to the next unit at a corner. At mealtime, and for assemblies, each group of pupils files through the corridors into the dual-purpose auditorium-cafeteria. There are no crosscurrents of traffic, no congestion.

"The school was designed for an enrollment of 720. We already have 800, and the plan still works. If our enrollment grows any more, we'll expand by adding more classroom units—with this layout it will be easy enough to do, and we have 20 acres.

"If you want to know about the practical workings of the building, I suggest you talk to our Principal, Mr. Northup."

LOF GLASS

L. W. NORTHUP
Principal

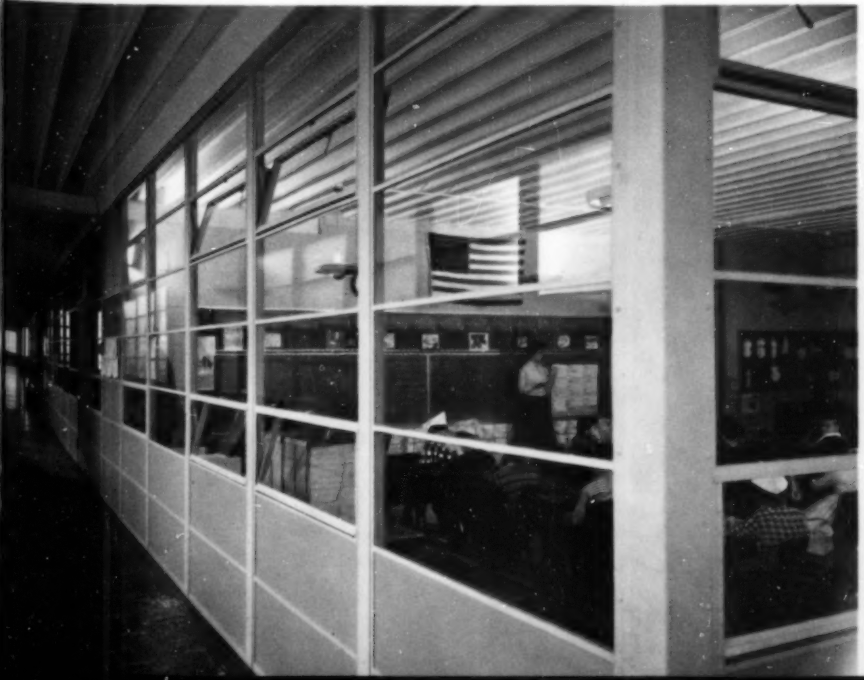
"After 34 years as a teacher, I was frankly dubious about the design of the school. I thought the children would be distracted by people walking through those glass-walled halls. But the teachers tell me that the children adjusted rapidly. They now pay no attention to corridor activity.

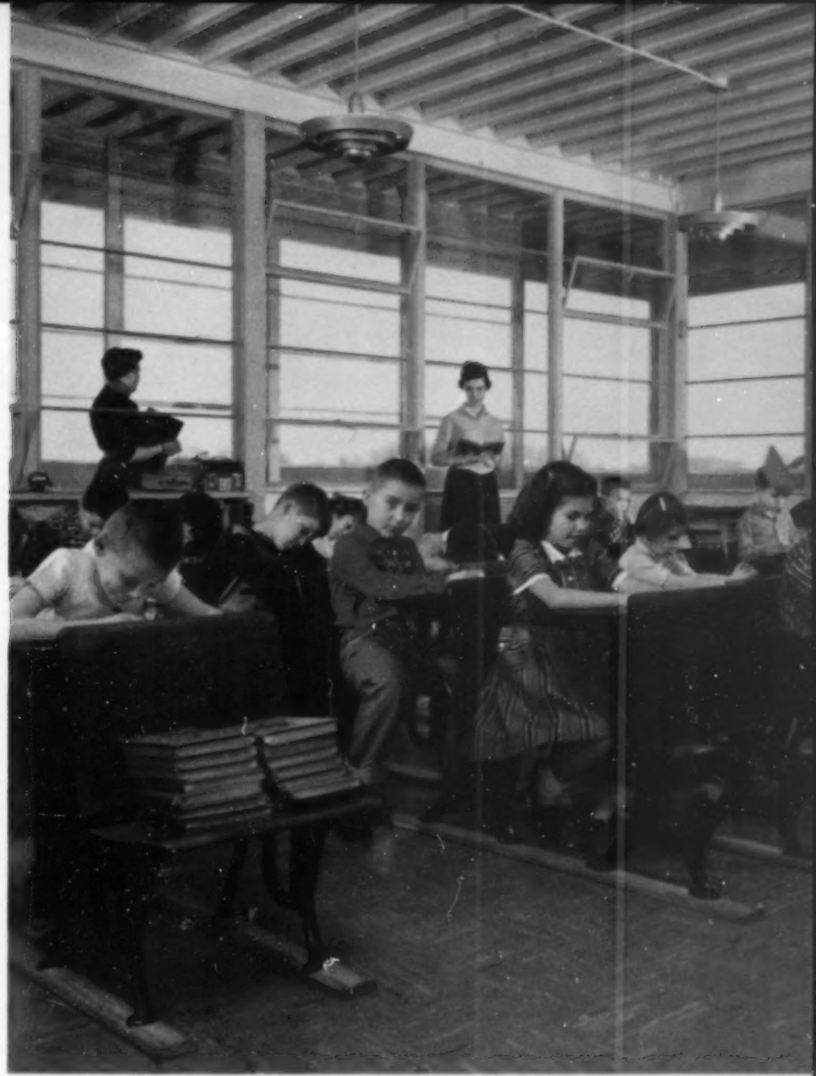
"I was also concerned for their comfort, but the halls are like double-glazing with a 6-foot air space. And the baseboard heating is marvelous. One day last winter it was 8° above zero outdoors and a high wind was blowing, yet it was 71° in the corridors and 73° in the classrooms.

"The units are comfortable in warm weather, too. The roof of the corridor functions as an overhang to keep the hot sun rays out of the classrooms. And both classrooms and corridors have windows that open, so each room has cross-ventilation. On still days, we can turn on the heating system blowers.

"But why not get a teacher's reaction to our school. I'd suggest you talk to Mrs. Geeting."

Daylight walled corridors of L·O·F Glass surround each building unit, and are interconnected, unit to unit.





Daylight floods each classroom from two sides. The children are comfortable, year 'round, insulated by the corridors which surround them.

MRS. MARY C. GEETING
Sixth-Grade Teacher

"It's like being released from prison. I taught in the same room at the old school for 26 years. It was dark and dingy—and often cold. The children were hard to organize, and discipline was a problem.

"Here, the daylight surrounds us and you feel almost like you're outdoors. The children never complain that they can't see, and I haven't had a single complaint about headaches. I feel less tired, myself, at the end of the day.

"We call the *corridor* our 'sun porch'. And it makes it so easy to get outside at recess. It's also a sort of *mud room* where snow and dirt is stomped off—so it doesn't get tracked into the classroom.

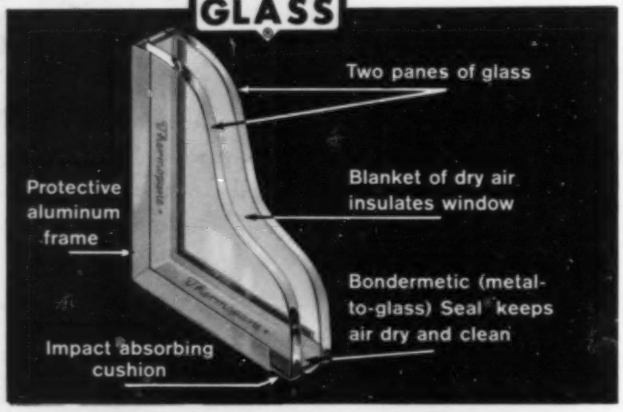
"Of course, you've noticed our old-fashioned desks. But that's only temporary. We've been promised new equipment when delayed funds become available. Despite the old desks, children take a lot of pride in their own particular units. They even wash their own classroom windows and boast that 'our windows are cleaner than yours'.

"To sum it all up, you have my permission to say—for all the teachers and all the kids—we wouldn't trade our new school for any other, anywhere."

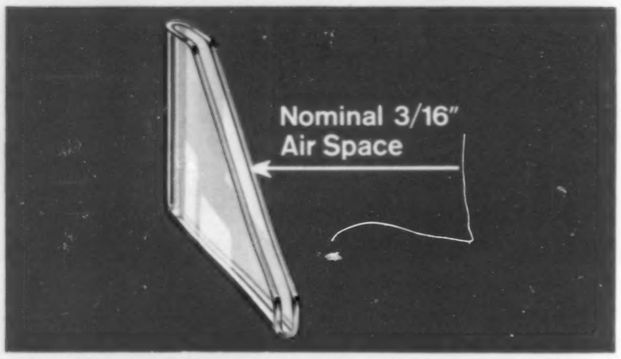
LOF GLASS

a Great Name in Glass

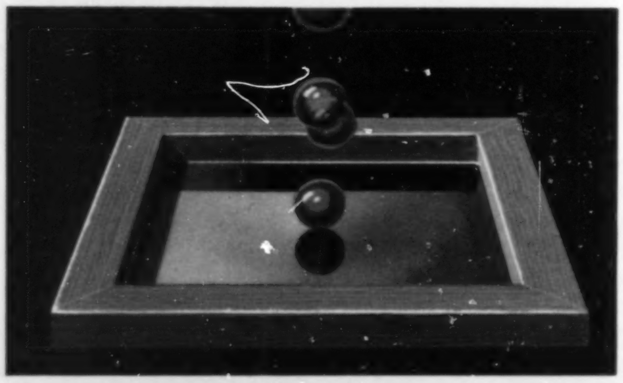
LIBBEY·OWENS·FORD GLASS CO.
TOLEDO 3, OHIO


Two panes of glass
Protective aluminum frame
Blanket of dry air insulates window
Bondermetic (metal-to-glass) Seal keeps air dry and clean
Impact absorbing cushion
Thermopane

THERMOPANE® *Thermopane* insulating glass puts two panes of glass and a sealed-in blanket of dry, clean air between the children and the outdoors. Drafts are reduced so rooms are more comfortable, especially for children sitting close to windows. *Thermopane* even deadens outside noises. And the heat lost through single panes is cut almost in half. Recommended for all windows where its insulating properties would result in substantial savings in winter.



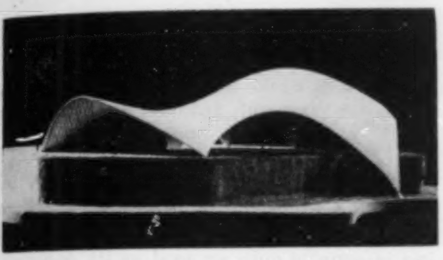
Thermopane is now available in two new, improved types: *Bondermetic Thermopane* (left, above) with the famous metal-to-glass seal now has its edges protected with an aluminum frame. *GlasSeal® Thermopane* (left, below) sets new quality standards for all-glass insulating units. Made of DSA sheet glass, its uniformly rounded, smooth edges make glazing easier and faster. Ideal for both wood and metal sash.



TUF-FLEX® Here you see a half-pound (1⅜" diameter) steel ball, dropped from a height of ten feet, bouncing harmlessly off ¼" thick *Tuf-flex* heat-strengthened glass. *Tuf-flex* is 3 to 5 times stronger than regular plate glass of the same thickness. If maximum resistance is reached, *Tuf-flex* disintegrates into relatively harmless, rock-salt size particles. Recommended for gymnasiums, entrance doors and side lights, areas facing playgrounds . . . any area where youngsters and missiles are in rapid motion.

VITROLUX® Used instead of masonry as an exterior facing material, also for interior partitions. Rich color, fused to the back of this clear, heat-strengthened plate glass, adds youthful beauty and cheerful character to your school. Natural resistance to weathering, crazing and checking. Standard maximum size of *Vitrolux* panels is 48" x 84". Special orders up to 60" x 84". Thickness: ¼" plus $\frac{1}{64}$" minus $\frac{1}{32}$". Sixteen standard colors plus black and white. Also in nonstandard colors subject to manufacturing limitations.

Torroja's structures . . . Haussman's city plans

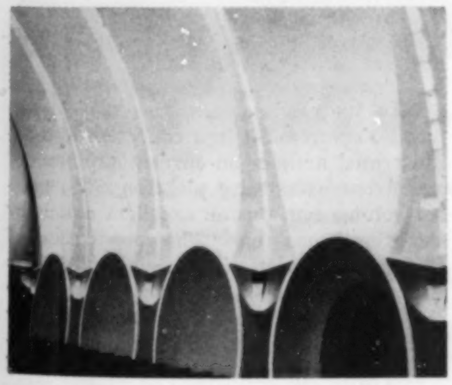


Double-curvature shell roof model for the Tachira Club, high above Caracas, Venezuela.

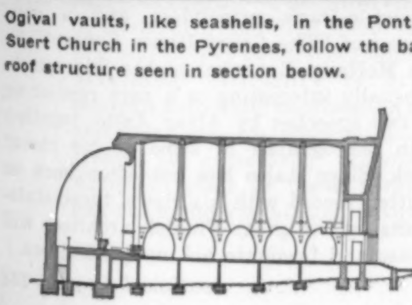
THE STRUCTURES OF EDUARDO TORROJA. An Autobiography of Engineering Accomplishment. By Eduardo Torroja. Foreward by Mario Salvadori. Published by F. W. Dodge Corp., 119 West 40th St., New York, N.Y. 198 pp. 8" x 11". $8.50.

Eduardo Torroja y Miret of Spain is one of that top group of contemporary architect-engineers, including Nervi of Italy, Candela of Mexico, and the late Matthew Nowicki of Poland, whose bold experiments in concrete shell and steel suspension structures have sounded the freshest note for architecture's future. This book, profusely illustrated, with a brief and lively running text by the designer himself, is the first published review of Torroja's work, comprising 30 major structures selected by the author, beginning with the graceful, shell-roofed Madrid racecourse of 1935.

A grave man with a Picassolike head, as bald, strong, and lightly arched as one of his concrete shells, Torroja is a mighty worker in reinforced concrete. Founder and director of the famed Technical Institute of Construction and Cement at Costillares, he is a great builder who combines solid mathematics, engineering, and experiment with the lyrical creation of new forms. (Not all are architecturally successful, for some bear a trace of angular, ponderous provincialism.) His technical solidity is shown in a great range of dams, bridges, viaducts, and aquaducts over Spain. His lyricism runs in strong, curved lines through individual buildings ranging from the Madrid racecourse to the remarkably poised, double-curved, eggshell-shaped Tachira Club for Caracas, Venezuela, which was built in 1957. A fine series of churches and chapels culiminates in the powerful, neo-Romanesque Pont de Suert Church in the Pyrenees (1952).



Ogival vaults, like seashells, in the Pont de Suert Church in the Pyrenees, follow the basic roof structure seen in section below.



Torroja's humanistic commentary on these buildings covers the intuitive, analytical, and model-testing stages of their creation. Typically, he is proud of the fact that all of his early structures but one survived heavy bombardment in the Spanish Civil War. On the one that did not—Fronton Recoletos (1935), then the largest fronton court in the world—he comments wryly: "Had I to build it again, I should provide reinforcement ribs, but unfortunately they would be of little avail against the type of aerial attack that we may expect in the future."

THE LIFE AND TIMES OF BARON HAUSSMANN. By J. M. and Brian Chapman. Published by The MacMillan Co., 60 Fifth Ave., New York 11, N. Y. 262 pp. 5½" x 8½". $5.

The authors of this biography of the great rebuilder of Paris during the time of Napoleon III have scrupulously maintained a position as historians, not critics; indeed, they disavow any attempt to assess Haussmann's work in terms of contemporary town-planning doctrines. But by simply telling the tale as it happened—and in particular the tale of the years 1852-69, during which time Haussmann transformed medieval Paris into the Paris we know—the Chapmans have written a startlingly contemporary account of city rebuilding. Here are all the conflicts between continuity and modernization, all the problems of slums at the city's heart, of relocation, of resulting economic segregation of the population, of subsidies gambled on future tax productivity, of parks successful and parks unsuccessful—problems as up-to-date as today's newspaper and next week's public hearing. Haussmann himself is a strikingly modern character; his close counterparts in energy, personality, prescience in some directions (and blindness in others) are to be found

continued on page 154

VERSATILE!

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CORE

Floors, walls, doors, partitions, roofs . . . Union HONEYCOMB is going into practically everything in modern prefabrication. The kraft cores — bonded between sheets of metal, wood, hardboard, plastics, asbestos or fiberglas — make the lightest and least expensive construction "sandwiches" known. And one of the toughest.

Exceptional strength

Wall, floor and roof panels made of feather-weight Union HONEYCOMB can take *10 to 20* times the normal loads required of ordinary frame construction.

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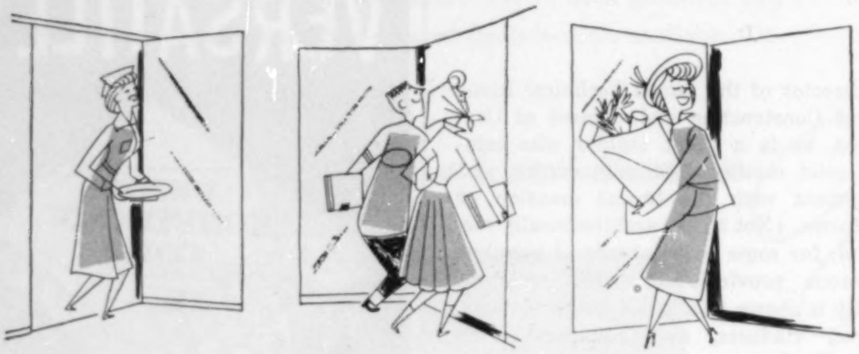
Positive Door Control is a MUST
where there's heavy traffic



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CONCEALED IN FLOOR
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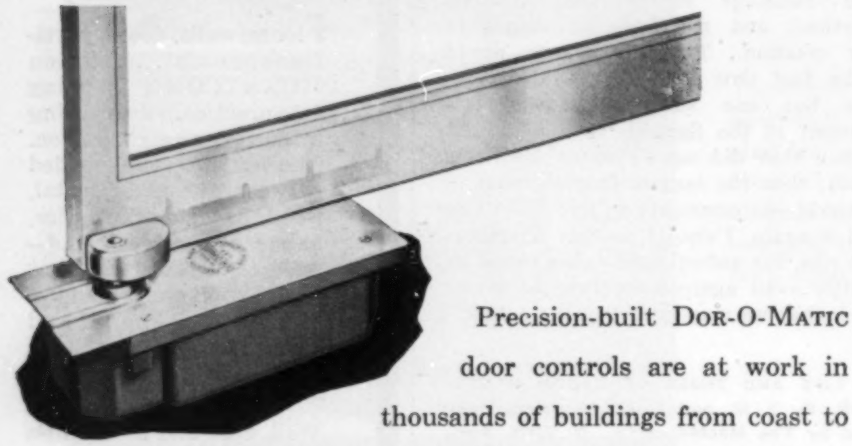

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for completely automatic door
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among our city rebuilders today. His and his city's problems of rebuilding throw a curiously candid sidelight on many of today's dilemmas; a story which would have seemed quaintly remote 20 years ago, today offers compelling and pertinent insights.

BUILDING FOR INDUSTRY. An Architectural Record Book. Published by F. W. Dodge Corp., 119 West 40th St., New York, N.Y. 309 pp. 9" x 11¾". Illus. Indexed. $9.75.

For those interested in the quality of the city's architecture — and architecture *is* the city — the fact remains that a building is usually only as good as its designer, and the fate of the new building rests firmly with the artist-architect. He, in turn, is dependent upon an enlightened or open-minded client. Because we live in a society where practical men of affairs distrust art and consider scientific efficiency the ultimate good, it has been a simple, profitable and esthetically disastrous process to discount the artist-architect and to reduce the art of architecture to a commercial operation.

The result has been a growing series of sizable, superficially impressive, second-rate copies of less-than-first-rate buildings. Most of these cannot be called architecture at all — if we understand it as one of the major arts — since their appearance is largely the result of accident, expediency, economics, and the inevitable march of industrial advance. They are economically "styled" rather than architecturally designed. The justness and sensitivity of their structural and decorative proportions — criteria of the great architecture of any age — are often ill-considered, if they have been seriously considered at all.

ARCHITECTS' YEARBOOK 8. Edited by Trevor Dannatt. Published by the Philosophical Library Inc., 15 East 40th St., New York, N.Y. 223 pp. 7¼" x 9¾". $10.

Like its predecessors, the 1957 *Architects' Year Book 8* is a collection of well-illustrated articles on current problems of architecture and city planning. The present volume contains an excellent article by the Smithsons on "The Aesthetics of Change" (a matter of special interest to American readers); an authoritative piece on the *Art Nouveau* architect, Victor Horta, by Edgar Kaufman, which re-evaluates Horta's role as the interpreter of Viollet-le-Duc's principles; and a good survey of "The Court House Concept" by Ian McHarg. But what makes this volume unusually interesting is a rare reprinting of two speeches by Alvar Aalto, together with photographs of some of his recent work. Since Aalto has not often been on written record with his views, these statements by the great Finnish architect will please and fascinate his many admirers.

continued on page 156

Coal scores with Notre Dame

University power plant burns coal for modern steam generation

Building expansion had put a strain on the power plant at the University of Notre Dame, South Bend, Ind. After careful study—by the firm of Albert Kahn Associated Architects and Engineers, of Detroit—a decision was made to modernize coal-fired steam facilities and add power generating equipment. Maximum efficiency is achieved through automatic combustion control and complete instrumentation. Today steam is generated *economically.* Another result of these innovations has been the *cleanliness* of operation . . . making Notre Dame's power plant a model of good housekeeping.

Consult an engineering firm

If you are remodeling or building new power facilities, consult a qualified engineering firm. Such concerns—familiar with the latest in fuel costs and equipment—will effect great savings for you in efficiency and fuel economy over the years.

Facts you should know about coal

Not only is bituminous coal the lowest-cost fuel in most industrial areas, but up-to-date coal burning equipment can give you 15% to 50% more steam per dollar. Today's automatic equipment pares labor costs and eliminates smoke problems. And vast coal reserves plus mechanized production methods mean a constantly plentiful supply of coal at stable prices.

For free booklet "Guide Specifications for Typical Low-Pressure Commercial Heating Plant" or for technical advisory service, write to the address below.

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Ramset speeds erection of two-story "piggy-back"

Thanks to curtain-wall construction and RAMSET® fastening, there was no need to reinforce the understructure of this new Denver office building. Using RAMSET, two new floors went up in three weeks *without disturbing the tenants in the lower eight floors!*

The speed, quietness and portability of RAMSET helped to make this "piggy-back" operation a success.

RAMSET operators are able to move fast because they have no power lines or bulky equipment to slow them down. One-hand operation makes for faster, safer work. Fasteners and charges are conveniently carried in a pocket. There is no time wasted drilling. Holding power exceeds old-style fastening methods.

Call your RAMSET dealer (listed under "Tools" in your phone book). He's an expert on fastening to steel and concrete.

T. J. Moore, architect; K. C. Construction Supply Co., curtain wall contractor; Neal Electric Co., electrical contractor; Bell Plumbing & Heating Co., plumbing contractor.

Ramset Fastening System
WINCHESTER-WESTERN DIVISION
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CLEVELAND 11, OHIO

THE NEW SCHOOL. By Alfred Roth. Published by Frederick A. Praeger, Inc., 15 West 47th St., New York 36, N. Y. 279 pp. 10" x 7". Illus. $11.50.

Since the appearance of Alfred Roth's exciting first New School volume, published some ten years ago, the principles of the progressive "play school" have gained wide acceptance and, recently, some rigorous criticism. However, just that criticism may be, and however dated some of the author's educational criteria may seem, the purpose of Roth's second volume, to spread the good news of architecture's profound relevance to education, will be applauded by all readers. And his effort to package this purpose in a trilingual book (English, German, French), illustrated with numerous pictures and plans of admirable new schools, is also praiseworthy. However, his publishers might better have given the illustrations more ink and more imagination.

HOUSING: A FACTUAL ANALYSIS. By Glenn H. Beyer. Published by The Macmillan Co., 60 Fifth Ave., New York 11, N. Y. 355 pp. 6¼" x 9½". Illus. $8.95.

This excellent little book covers the entire field of housing. It is brilliantly concise, well written, and concludes with a well-directed pitch for coordinated research in housing. A minor regret is that the illustrations are printed so muddily that it is hard to tell "good" from "bad."

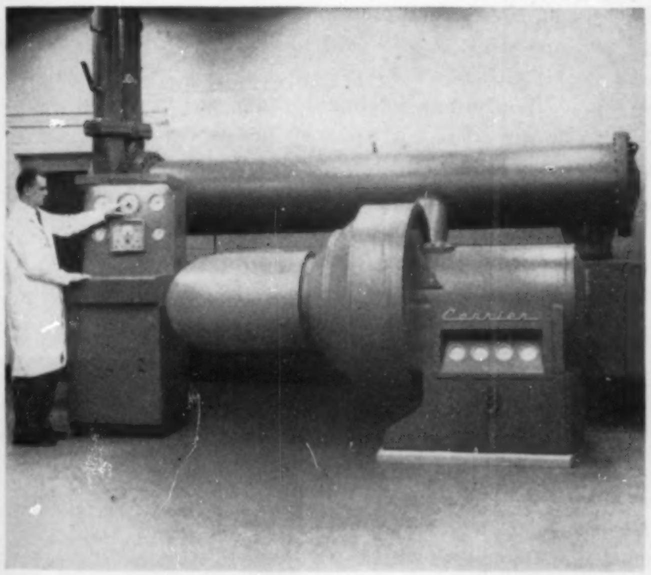
NOT WITHOUT HOPE. A Report and Recommendations on Family Relocation by the Committee on Housing, Community Service Society of New York, 105 East 22nd St., New York 10, N.Y. 96 pp. 6" x 9". 75 cents.

Cloaked in the cool tone of a report, this is a modern horror story, a hair-raising rattling of one of the skeletons in the closet of the New York Housing Authority. It seems that sites condemned for housing projects, from which tenants are moved, are then sometimes used, until demolition starts, as temporary reservoirs for families dislocated from other sites where demolition has begun. Into these reservoirs a hell of vandalism, rats, instability, and deterioration are shunted the Authority's worst "relocation problems." This is an examination of 138 such families, some of whom had been shunted from one site to another many times, and of the means by which permanent housing was found for 119 of them. The recommendations add up to a plea for more effort, more relocation staff, and more plain human decency on the part of a housing empire, together with a recommendation for a thorough study of present federal limitations and local policies on public housing eligibility. "There is considerable doubt" concludes the report in a piece of notable understatement, "whether [the present procedures] provide the best way of accomplishing the goals of public housing." END

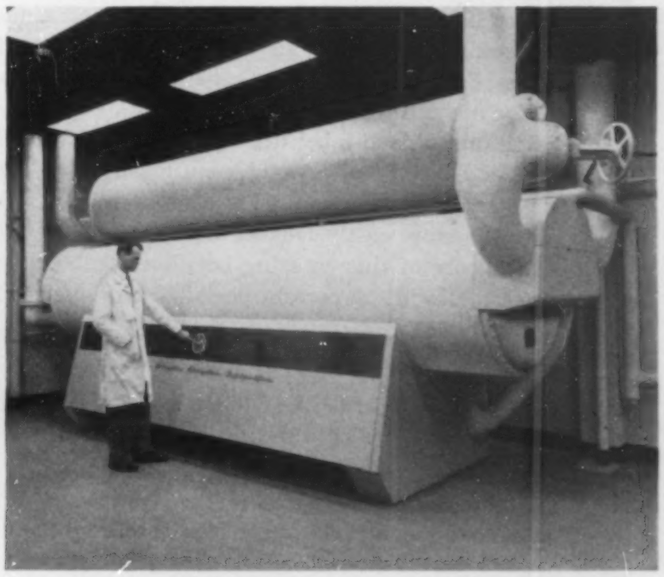
BETTER AIR CONDITIONING FOR EVERYBODY Carrier EVERYWHERE

Which way is best to air condition a building?

Every building poses different problems. Take the refrigerating machine, for example. Where should it be located? What kind of power is available? How much tonnage do you need? Carrier builds every type of refrigeration for air conditioning. Two of the many types are shown below. Each provides unique advantages under special conditions. Each has been proved practical and dependable in installation after installation. For complete information about them, call your nearest Carrier office. Or write Carrier Corporation, Syracuse, New York.



If you have low-cost electric power, the new Carrier Hermetic Centrifugal Refrigerating Machine offers unmatched advantages. It's the only hermetic with such advanced features as refrigerant-cooled motors through the entire capacity range, hydraulic powered capacity vanes, and electronic controls for completely automatic operation. Its compact design and light weight minimize space and structural requirements. In 28 sizes—90 to 1100 tons. Other Carrier Centrifugals up to 4000 tons. For smaller buildings, there are "packaged" Carrier Reciprocating Water Cooling Machines from 3 to 200 tons.



If you have low-cost steam, the best way may be a new Carrier Absorption Refrigerating Machine. It cools with heat energy derived from low-pressure waste steam or hot liquids to cut costs. Operates automatically at the push of a button. Follows fluctuating loads electronically from full load to zero capacity. It's safe — with water the refrigerant, a simple salt the absorbent. And it's so compact and vibration-free you can locate it wherever there's room to spare — on the roof, in the basement or anywhere in between. In thirteen sizes with cooling capacities ranging from 60 to 700 tons.

Another "first" from **Roddis**

NOW...a flush veneered C-LABEL fire door!

Now architects can get all the beauty of a flush veneered wood door . . . ¾ hour Underwriters approved . . . with Light Openings as large as 30"x40". Every door guaranteed for the life of the installation.

From the advanced door research program of Roddis comes another development of importance to America's architects—

Roddis now makes available, for the first time in the industry, an all-wood, flush veneered, ¾ hour fire door. It's the new Golden Dowel C-label Fire Door!

For use in interior walls of corridors, or for room partitions, this C-label door gives you all the richness and beauty of a wood veneered door . . . plus excellent fire protection . . . at a considerable savings over the more costly B-label door.

The core of this amazing new door is made by a *patented* Roddis process. Special, fire-proofed wood particles are bonded with a waterproof, thermo-setting resin under heat and pressure. Then each side is faced with two-ply veneer panels. This exclusive construction has earned the C-label classification from the Underwriters' Laboratories.

What's more, you can have larger light openings with the Golden Dowel C-label door than are possible with a B-label door. Vision openings up to 1,200 square inches have been approved by Underwriters for this new door. And Roddis will cut them and supply the complete panel assembly for you. (Standard sizes, 30"x40", 30"x36", 24"x36", 18"x30", 8"x12", 10"x10".)

You enhance your designs, assure protection and lower costs for your clients when you specify the new Roddis flush veneered, C-label Fire Door. And remember . . . the GOLDEN DOWEL means "guaranteed for the life of the installation".

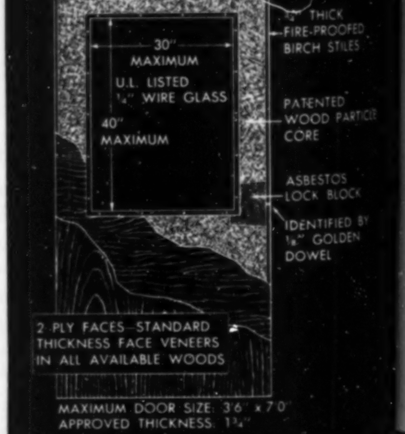
For complete details and specifications send coupon below.

COMPLETE CUSTOM PRE-FINISHING!

from the prime-and-seal coat to the final finish coat

For maximum factory-to-installation protection, finer end results, you can specify your Roddis Doors *primed and sealed* at our factory before shipment. Roddis' new, automated production line applies a special synthetic resin sealer to the double-sanded, dust-free doors. After drying, the doors are sanded again to emerge with a tough, smooth undercoat that assures a perfect on-the-job finish application.

Completely pre-finished doors are also available. You can specify doors finished in color tones to match any of the 9 woods in the Roddis Craftwall paneling line . . . or to match your own color sample.


1½" RAILS TOP AND BOTTOM, FIRE-PROOFED BIRCH
½" THICK FIRE-PROOFED BIRCH STILES
30" MAXIMUM
U.L. LISTED ¼" WIRE GLASS
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PATENTED WOOD PARTICLE CORE
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2-PLY FACES—STANDARD THICKNESS FACE VENEERS IN ALL AVAILABLE WOODS
MAXIMUM DOOR SIZE: 3'6" x 7'0"
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High standards of workmanship and beauty over the years have established famous Roddis Doors as first choice among architects and builders. Choose from the most complete line of wood doors in the field . . .

HOLLOW CORE **B and C-LABEL FIRE DOORS** **INSTITUTIONAL**
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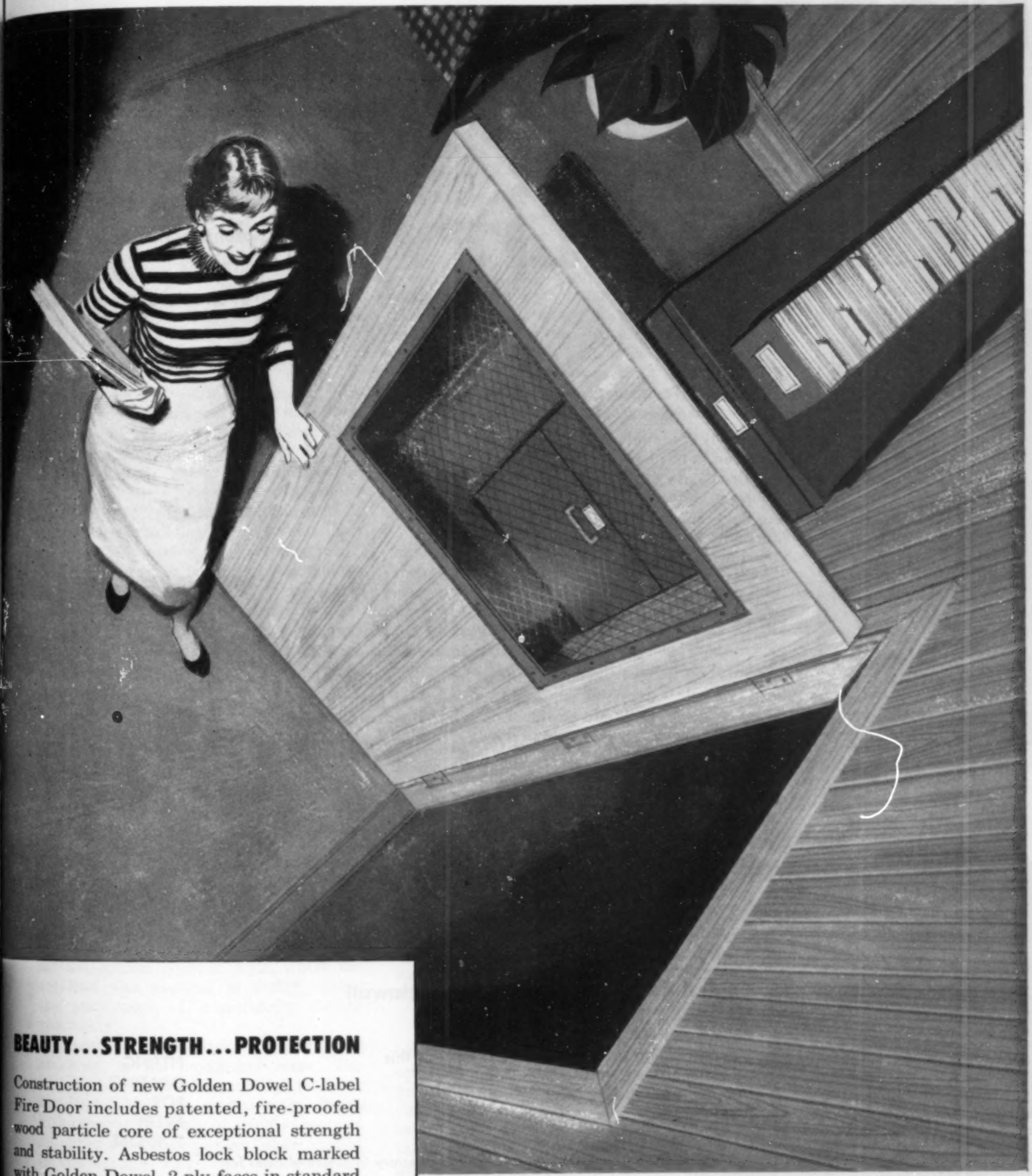

BEAUTY...STRENGTH...PROTECTION

Construction of new Golden Dowel C-label Fire Door includes patented, fire-proofed wood particle core of exceptional strength and stability. Asbestos lock block marked with Golden Dowel. 2-ply faces in standard thickness face veneers. Wide choice of first grade woods. Light openings up to 30"x40". ¾-hour protection approved by Underwriters' Laboratories.

RODDIS PLYWOOD CORP.

Marshfield, Wis.
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Please send complete information on new Roddis Golden Dowel C-label Fire Door.

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Curtis Hall, Temple University, Philadelphia

Nolen & Swinburne, Architects

An unusually light and transparent appearance is achieved in this new 4-story classroom building by the extensive use of IRVICO type CC pressure-locked aluminum grating as sunshades. These help reduce air-conditioning costs and help control sky glare. They also serve as window cleaning walkways.

Angell Hall, University of Michigan

Kahn Associated Architects and Engineers, Inc.

Vestibule mats of Irving grating prevent excessive grit, mud and wetness from being tracked into corridors of public structures, office buildings, schools and the like. Grit, rain, snow and slush drop through the open-mesh grating to receptacles below which can then be flushed into sewers. Thus a clean entrance is always assured, and the cleanliness of the interior is in turn preserved.

Capital Building, Waikiki, Oahu, Hawaii

Wimberley and Cook, Architects

Beauty and utility are combined in the balcony railing around the second floor of this new office and retail store building through the use of IRVICO type AA.

"A FITTING GRATING FOR EVERY PURPOSE"

Consult local classified telephone directory in principal cities for nearest Irving Sales Engineer (or request AIA No. 14P20 directly).

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ORIGINATORS OF THE GRATING INDUSTRY

What other people are saying

CURTAIN WALL ESTHETICS

In the hands of competent designers, the curtain wall can bring serenity, harmony, and repose to the streetfront. But too few architects are trying to achieve this, according to Ada Louis Huxtable, architectural author and critic, in a recent issue of the New York Times *Magazine:*

As for the fear of monotony and uniformity raised by the increasing use of the curtain wall, one may ask: Is the present visual chaos of our cities really better? Can we actually prefer the incompatible and elaborately ugly edifices with which we have lined our streets in the past 50 years? Great buildings are few and far between. Architecture is a background for life and, except for the isolated monument, should offer serenity, harmony, and repose. This was the aim of the planned Renaissance city, with its "monotonous" uniform cornice lines and deliberately "repetitious" windows, and of the eighteenth-century city, which we still admire so unreservedly, and which again depended on the "uniformity" of symmetrical façades.

Curtain-wall construction, properly designed and executed, could deliver us from the present anarchy and return us to this perennial ideal. Nor is it any more reasonable to suggest that mass production of building parts (the logical aim of the curtain wall) must result in inescapable monotony. This kind of architecture is potentially less limited in the richness of its effects than was the familiar and beloved classical style, where the architect was required to design within the restrictions of a carefully defined vocabulary.

Character is not lacking today, only ornament in the traditional sense. The ornament that was desirable for masonry façades — which, as a material, offered little decorative effect in itself — becomes an out-of-scale anachronism when applied to the curtain wall. That contemporary design is intrinsic, rather than applied, makes it no less rewarding to the eye.

Only the architect can save us from the fate-worse-than-monotony, and he's going to have a fairly rough time. In the final analysis, the success or failure of the new buildings depends to a surprising degree on the taste and talent of the designer. There has been no bigger or more responsible job in the history of his profession, and history will provide him with no answers, for the task involves unprecedented problems in both structure and design. He is sitting on an architectural hot seat, and it is no wonder that he occasionally seems to want to run and hide.

It is easier, for example, to blame the zoning laws for poor design than to admit the possibility of artistic error, for these rigid regulations that govern the size and shape of New York's buildings by requiring setbacks above certain heights, for light and air, undeniably determine the unfortunate layer-cake form of most of our commercial construction. Another popular refuge is the constant necessity to cut costs, although it is no secret that a successful building can be designed on a limited budget.

All of this makes it possible to skirt around the basic issue: the free, creative choice which every architect must exercise within the specific limitations that vary with the job. Many architects treat this part of their work as if it were something slightly shady, putting their solutions safely beyond criticism by ascribing them to purely practical factors. They speak of curtain wall construction, not as an instrument of creative design, but as a kind of automatic technological cure-all.

RENEWAL AND GROWTH

In a talk before a recent conference of the National Association of Housing and Redevelopment Officials M. Carter McFarland, acting assistant administrator of HHFA, discussed the influence of city redevelopment on the U.S. economic growth. McFarland is acting assistant administrator of the Housing and Home Finance Agency.

Let us explore a little the relationship between urban renewal and our nation's economic growth and development. Viewed generally, our economic system is the device which we use collectively to create useful goods and services and to distribute them. We think we are making good progress when the net productivity of our system increasess by 3 per cent a year.

Generally, we improve our productivity by improving the skills of our working force and by providing them with better tools and facilities which will make it possible for them to produce more with the same amount of effort. A machine is a capital improvement. So is a house, a school, or a park, in the sense that they are an investment which increases services and satisfactions.

To what extent does urban renewal con-

continued on page 162

OF ALL CEILINGS:
The first . . .

SLIP MOULD
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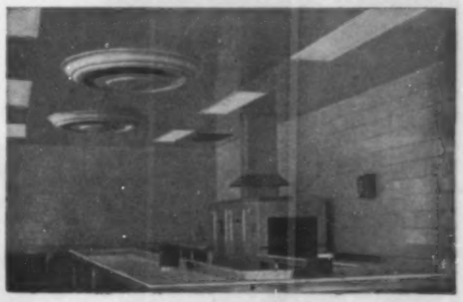
SNAP BAR

to be developed exclusively for today's service-filled corridors is the SIMPLEX wall-hung acoustical ceiling. It spans 8 feet without vertical support and its easily removed, long spanning panels permit 100% access to all services.



The most economical . . .
for kitchens is the SIMPLEX aluminum acoustical ceiling. Its all aluminum construction never deteriorates—even under severe moisture conditions—never needs repainting and stays new looking with a minimum of maintenance. It pays for itself.

Hospitals . . .
such as this Coney Island New General Hospital in Brooklyn, N. Y. use SIMPLEX ceilings extensively in kitchens and corridors (226,000 sq. ft. used here). Architects: Andrew J. Thomas and Katz, Blumkrantz, Stein & Weber.

Send for booklets with details, photographs and "specs" to Simplex Ceiling Corp., 552 W. 52 St., New York 19, N.Y.

SIMPLEX
Ceiling Corp.
552 W. 52 St., New York 19, N.Y.
☐ Please send me booklet on corridor ceilings.
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Name ....
Firm ....
Street ....
City .... Zone... State......

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We realize that any concern seriously considering building, or otherwise acquiring an additional plant in a new area, has in mind certain definite requirements.

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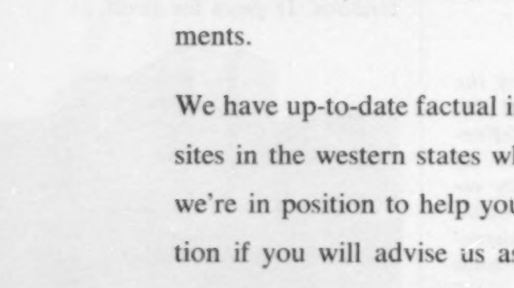
Contact us direct, if you wish, or get in touch with your nearest Union Pacific representative.



Map shows the vast western area served by Union Pacific.

INDUSTRIAL DEVELOPMENT DEPARTMENT
UNION PACIFIC RAILROAD
OMAHA 2, NEBRASKA

tribute to our economic growth and development? While it is not easy to measure specifically, urban renewal's contribution is very great.

First, urban renewal contributes to economic growth because it is essentially a process of investing part of the nation's resources in capital goods that do improve our wealth and our standard of living.

Second, urban renewal has a direct effect on economic growth by making more efficient and productive the urban organism which is where a high proportion of our nation's production, exchange, and consumption is performed.

Third, it is an economic axiom that our free market system works better and more efficiently in the distribution of goods and services when consumers are better informed and have more knowledge of and access to alternative choices. Viewed from this standpoint, urban renewal contributes to economic efficiency by making possible a rational and well-organized downtown area to which a greater number of consumers have free access to a greater number of alternative choices of goods and services.

GOOD TASTE

The late Christian Dior in a brochure prepared by the San Francisco Museum of Art set forth his rules of good taste:

Each country has an individual expression, but the rules of good taste are the same the world over—though the expression of the individual country often affects the final result, the underlying criteria apply everywhere. Whether you are designing a dress, a house, a motorcar, a fabric, a shoe, or a tiara, the rules of good taste are the same: simplicity, a sense of color, the refinement of details.

THE MODERN CHURCH

Because the church today is in the process of rethinking its themes, its symbols, and its needs, the architect has difficulty in knowing how to design a modern church. "Make it beautiful" is the simple and timely advice of Dr. Theodore A. Gill, managing editor of Christian Century. *This was his plea to church architects assembled at a recent joint conference of the Church Architectural Guild and the National Council of Churches.*

We ask you only to build beauty. In honesty and truth to build beauty. Impatient with the parochialisms that have long been mistaken for revealed truth and the patterns that have long been confused with holiness, we want you now to think and feel and imagine your way down through all these to the truth below that it may well up in your creations.

We in theology ask you in the arts to

continued on page 164

Automatic Door Openings Rate Consideration of Store Planners

An important part of any store front is the door openings. Make them automatic and you get functional efficiency *that is good for business.* Where store doors are operated automatically by STANLEY *MAGIC-DOOR* controls, customers find shopping easier and more pleasant . . . so that's where they do business.

In the complete *MAGIC-DOOR* line, the controls most suitable for the operation of store entrance doors are STANLEY *MAGIC-DOOR* carpet or photoelectric controls. Because of the growing trend toward more colorful store entrances, STANLEY *MAGIC-DOOR* carpets are available in a range of weather-fast, traffic-resistant colors.

MAGIC-DOOR operators may be visible or concealed overhead or in the floor. *They meet every architectural requirement of space and appearance.*

When planning automatic door openings for tomorrow's stores, remember that *MAGIC-DOOR* has been the leader in the field for a quarter of a century. Write for complete information and the address of your *MAGIC-DOOR* authorized representative.

Thought for today in planning stores of tomorrow

. . . . . STANLEY *MAGIC-DOOR* Controls

Design functional efficiency into your store plans by including automatic door controls. And in making your selection *look to the leader in the field* . . . STANLEY *MAGIC-DOOR.* *MAGIC-DOOR* controls are products of a quarter-century of experience. In thousands of installations, they have proved dependable.

Call on the authorized STANLEY *MAGIC-DOOR* Representative for ideas and technical planning assistance at the planning stage.

For immediate information, see Sweet's Architectural File or write for A.I.A. File No. 16-D to Magic Door Sales,

The Stanley Works, Dept. F, 1005 Lake Street,
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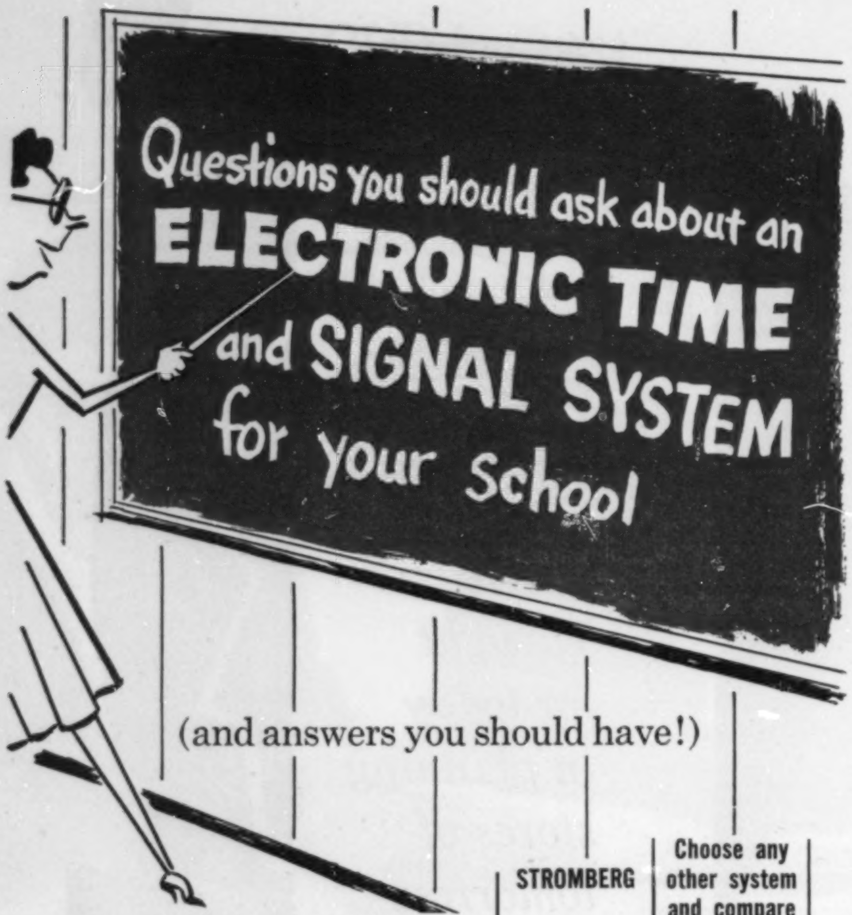
Sales and service representatives throughout the United States and Canada.

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY

STANLEY

This famous trademark distinguishes over 20,000 quality products of The Stanley Works—hand and electric tools • drapery, industrial and builders hardware • door controls • aluminum windows • metal parts • coatings • steel and steel strapping—made in 24 Stanley plants in the United States, Canada, England and Germany


Questions you should ask about an ELECTRONIC TIME and SIGNAL SYSTEM for your School

(and answers you should have!)

	STROMBERG	Choose any other system and compare
Does it have a jeweled Master Clock movement?	Yes	[ ]
How long will the Master Clock operate *accurately* (without batteries) during periods of power interruption?	72 hrs.	[ ]
Do secondary clocks complete *both* hourly and 12-hour correction cycles in just one minute?	Yes	[ ]
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One channel is usually allocated to clock supervision. How many channels does that leave for *program* signals?	6	[ ]
Are *all* components pluggable for ease of maintenance?	Yes	[ ]

Stromberg's new Electronic Time System is a product of the laboratories of one of the largest clock manufacturers in the world—*YOUR GUARANTEE of performance, quality and dependability.*

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join us as we drill down through 2,000 years of cultural overlay to the reality that we have bet is there. Your earnestness in this is far more important to us now even than your familiarity with creeds and symbols. The French Roman Catholics say as much when they declare that an atheist artist who will create honest new beauty for the church is far more important to them than a pillar-of-the-church artist who just hacks out his repetitive jobs. Paul Tillich says the same thing when he claims that there is more Christian truth in the leg of a chair by Van Gogh than in a whole gallery full of Madonnas by Murillo.

The fact is that we are in a fix on our specifics, our classic Christian symbols. They are almost all in flux. To use them too explicitly today could make embarrassing anachronisms of all that we build. If you can't be such blithe symbol-users any more, maybe now you can be symbol-creators. Why not toss up to the church some new signs and images for its self-understanding? It has been done before, I am sure. The much used and abused A-frame that you have given us was a structural principle long before it was a theological symbol of the tent for sojourners in the earth.

We need you. We need your imagination. You are free artists. Don't let the bookish men of the church seal you into old images. Symbols are your business even more than they are the theologians'. So produce them. The tethering facts and faith that bind you to each new church construction have never been more elastic than now, so let the fancy fly and sweep its wider circles. Don't try so blooming hard to remember and to think. Things get too "sicklied o'er" that way. Don't worry so hard about the formalists you have to serve. In a tradition with the length and breadth of the church's, there is no shape you can come up with that couldn't in a pinch be related somehow to some person, place, or thing in the tradition. And don't worry about going out of bounds. A religion that can make a criminal *cross* its sign of glory can hardly be surprised or affronted by any symbol you will suggest. So dream and dare.

The church nor anyone else has anything to teach you about that. But your imagination—your risking, failing, trying again, succeeding imagination—this we miss and would invoke. That imaginations have sometimes been inhibited by the church that now makes the plea we know full well. Not for a moment do we forget those committees and budget repressions. I promise you that we who know your creative value to the whole church will do what we can at the committee end of things to give you scope.

But do you now dream, and catch the dream, and challenge us to its building.

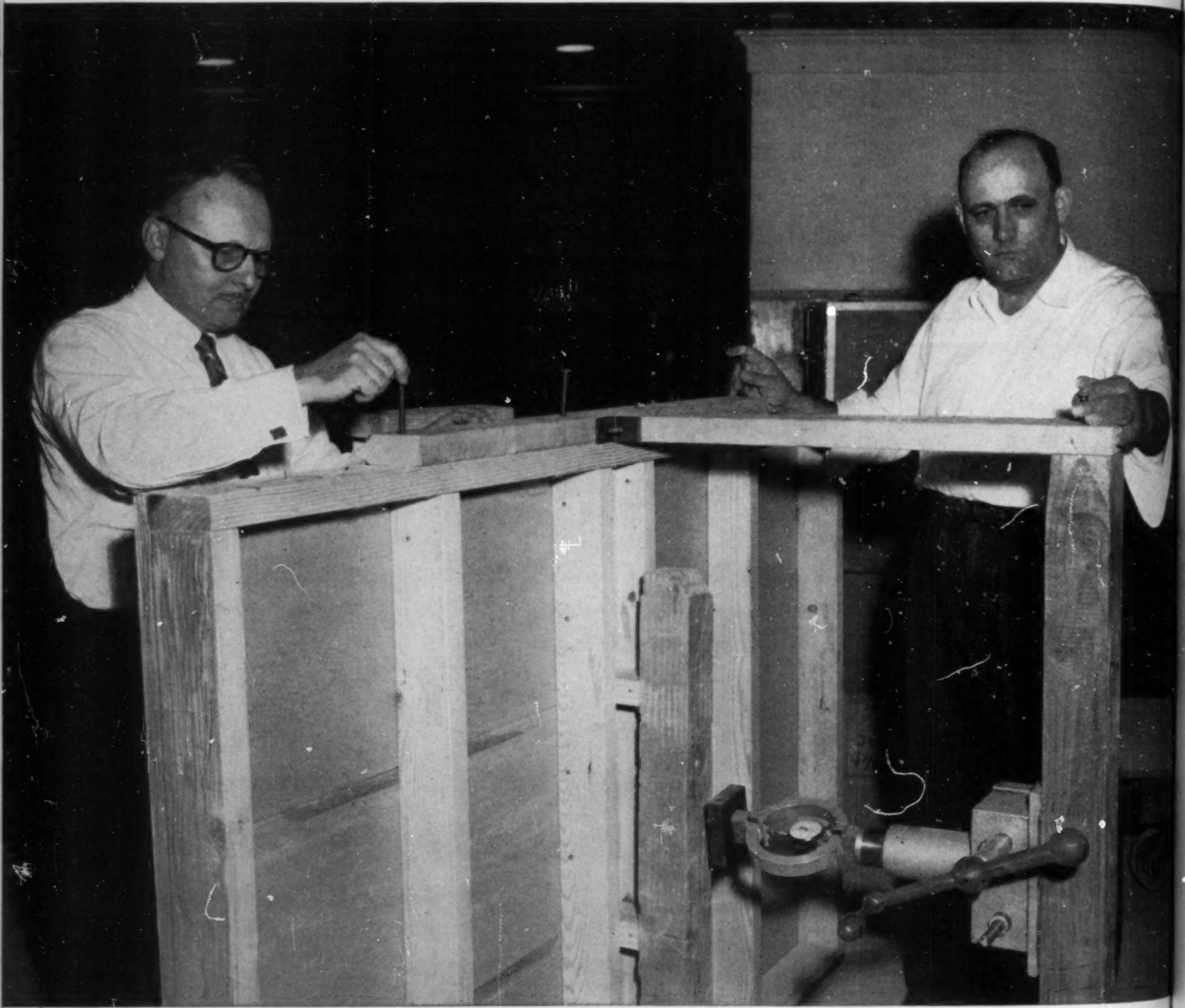
END

Comparison test of crack resistance of four most common types of reinforced plaster corners

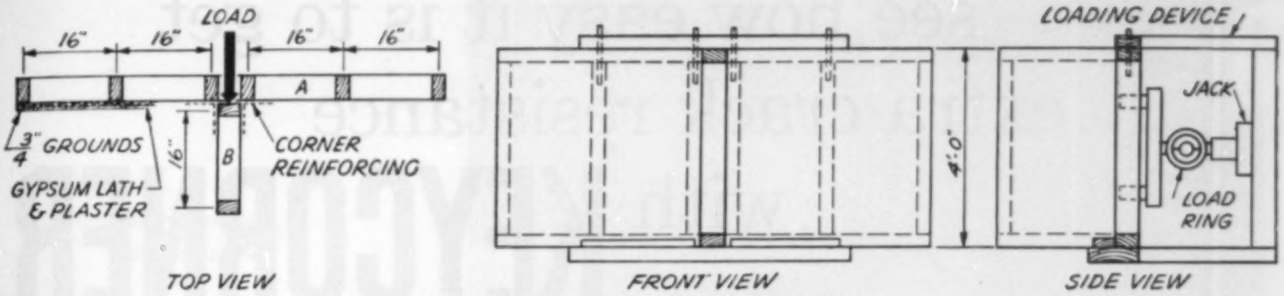
with New KEYCORNER, you can almost double crack resistance, tests reveal

[See next page for digest of test report by Research Foundation, University of Toledo.]

how crack resistance of plaster corners was tested



A series of tests on crack resistance of plaster corners was recently completed by Edwin L. Saxer, Professor and Chairman, Civil Engineering Department, Research Foundation, University of Toledo. Here you see the design of the test specimens, and the assembly of the testing equipment.



Wall section A and wall section B held together only by plaster and the embedded reinforcing fastened to the gypsum lath by a few light staples.

Test panels were built so that a measurable force could be applied to the test panel so as to produce direct stresses on the reinforced corners of the specimens.

These specimens consisted of two parts: one, a section of wall 48 inches high and approximately 70 inches long; the other, a similar section, but only 16 inches long.

The construction of the frames and studding, as well as application of gypsum lath, complied with F.H.A. recommended practices.

These two sections were aligned in the shape of a "T" and were held together only by the plaster and the embedded corner reinforcing. The corner reinforcement was fastened to the lath by a few light staples before application of the brown coat.

At the juncture of the two sections, openings were provided so as to permit the application of loads which forced one section away from the other, thus bringing about a severe cracking tendency at the two interior corners.

Load was applied through a precision screw jack having a capacity of 10,000 pounds, and was measured by a 6,000 pound capacity proving ring having a sensitivity of 5 pounds.

The magnitude of the load required to produce the first crack was the criterion for evaluating reinforcing. However, all tests were carried beyond this point in an effort to gain some measure of the ultimate capacity of each material. As it turned out, it was not possible to ascertain maximum strength because the specimens failed in some way first, namely pulling the gypsum lath loose from the studding.

here's what tests reveal

Based upon these tests it is concluded that KEYCORNER lath when embedded in gypsum lath and plaster angles provides better than 1⅔ to almost two times as much resistance to cracking than any of the other materials tested:

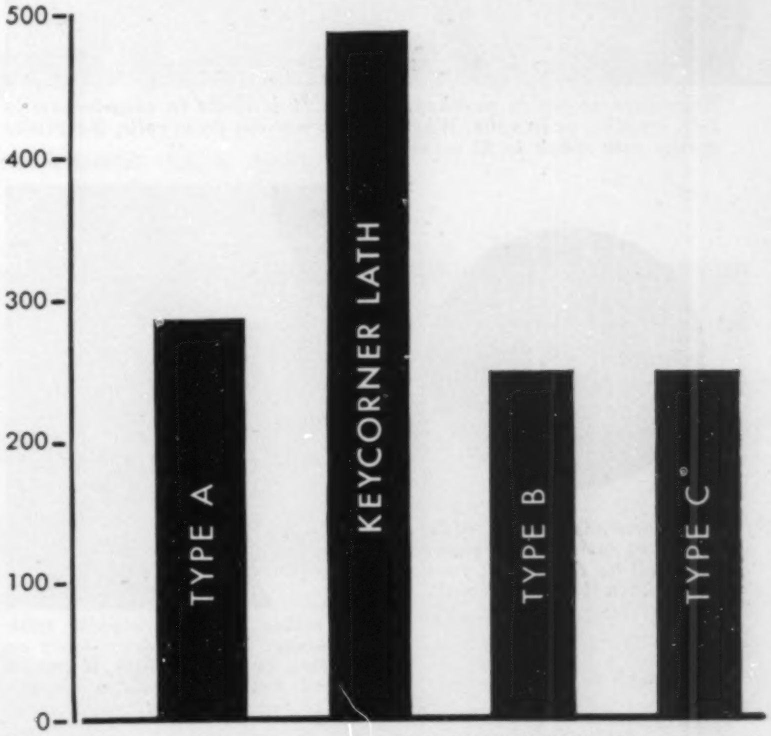
1 The results make it obvious that Keycorner imparts a strength when embedded not present in any of the other products tested.

2 The open mesh design of Keycorner does not impair the bond of the plaster to the lath.

3 The design of the welded wire product imparts only enough strength when embedded to resist cracking up to about one half the loads of the Keycorner design.

4 Reinforcing angles made from 21 ga. wire lath greatly reduce the bond strength between the plaster and the lath under the reinforcing and when embedded resist cracking up to about one half as much load as Keycorner.

5 Even though heavier and with wider flanges, the design of the 3" x 3"—2.5 pounds expanded metal lath cornerite imparts only enough strength to a gypsum lath and plaster angle to carry 59% as great loads, without cracking, as Keycorner lath.



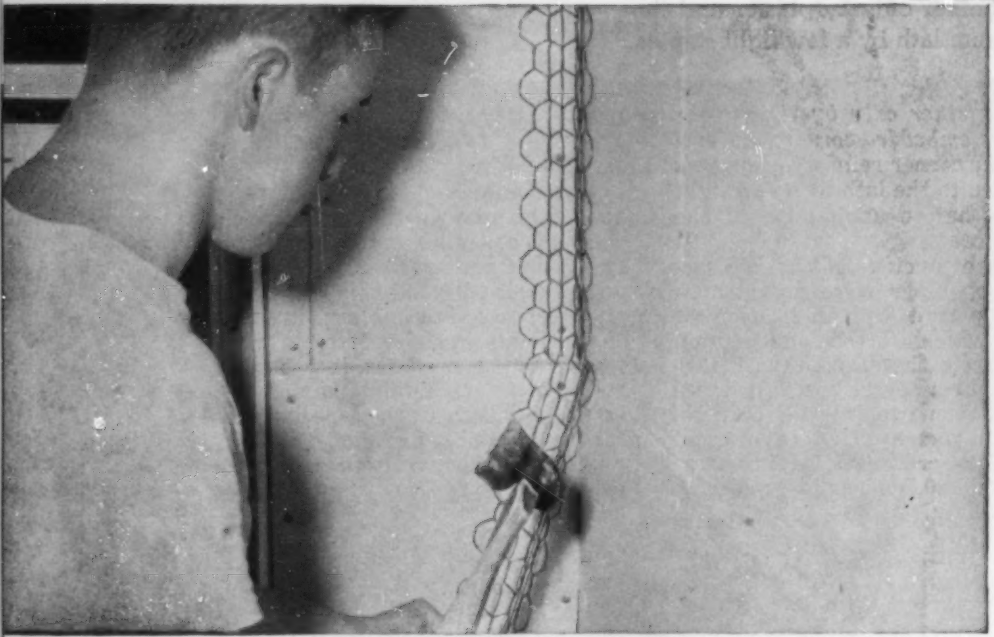
This chart records the results of KEYCORNER, plus those of the other commonly used types of reinforcement tested by Saxer.

They included 3" x 3"—2.5 lb. metal lath cornerite; 2" x 2"—18 ga. welded wire cornerite; 2½ x 2½ meshes—21 ga. galvanized wire.

Load Test Data

		(Load Lb.) First Crack			(Load Lb.) First Crack
Type A	1st	300	Type B	1st	250
	2nd	275		2nd	250
	Average	**288**		Average	**250**
2"x2"—19 ga. Keycorner	1st	475	Type C	1st	250
	2nd	500		2nd	250
	Average	**488**		Average	**250**

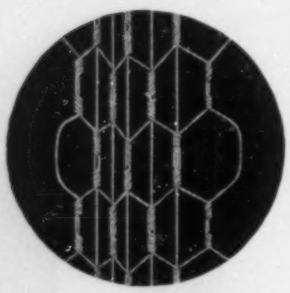
see how easy it is to get extra crack resistance with KEYCORNER



Keycorner comes in preshaped form. It is made in easy-to-handle 4-ft. lengths, or in rolls. When lengths are cut from rolls, the pieces spring into shape to fit corners.

KEYCORNER
GALVANIZED REINFORCING

Four-foot lengths are packed in strong cartons, 1000 ft. per carton. This assures delivery to the job in good condition. Rolls are tight and compact to stand up under normal job abuse.



Keycorner is galvanized to prevent rusting before use, as well as to prevent rust streaks in the finished wall.

Use either nails or staples with Keycorner. For use over doors or windows, or as strip lath, it can be pressed flat to provide a smooth surface for plastering.

Keycorner is precision shaped to assure proper embedment in the plaster for maximum reinforcing value. It is easy to lap without interfering with plastering.

SPECIFICATIONS

Wire gauge	2"x2"—4' lengths Lineal feet per package	Shipping wt. per package
19	1000	65.5 lbs.
	4' wide x 500' rolls	
19	1000	65 lbs.

Keystone Steel & Wire Company
Department AF-68
Peoria 7, Illinois

Please send me test report on Keycorner.

*Name*____________________

*Firm*____________________

*Business*____________________

*Street*____________________

*City*____________ *State*____________

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KEYCORNER
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Keystone Steel & Wire Company
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Keymesh • Keycorner • Keybead • Keyweld
Keystone Nails • Keystone Tie Wire
Keystone Furring Nails • Concrete Nails

MOSAIC

Architect: O'Dell, Hewlett & Luckenbach. Tile Contractor: Palombit Tile Co. Plate No. 266

Mosaic Ceramic Tile

IN HOSPITALS

AMERICA IS ENTERING THE CERAMIC TILE AGE

Architect: David H. Horn & Marshall D. Mortland. Tile Contractor: Fresno Marble & Tile Co. Plate No. 511

Architect: Ferrenz & Taylor. Tile Contractor: A Tozzini Tile Works, Inc. Plate No. 319

THE MOSAIC TILE COMPANY

CERAMIC TILE IN HOSPITALS

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THE MOSAIC TILE COMPANY CERAMIC TILE IN HOSPITALS A. I. A. FILE NO. 23-A

Mosaic Ceramic Tile
IN HOSPITALS

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The Mosaic Tile Workbook for Architects, Form No. 226, is in Sweet's. For additional data, write The Mosaic Tile Company, Dept. A, Zanesville, Ohio, or The Mosaic Tile Company, Dept. A, 829 N. Highland Ave., Hollywood 38, California.

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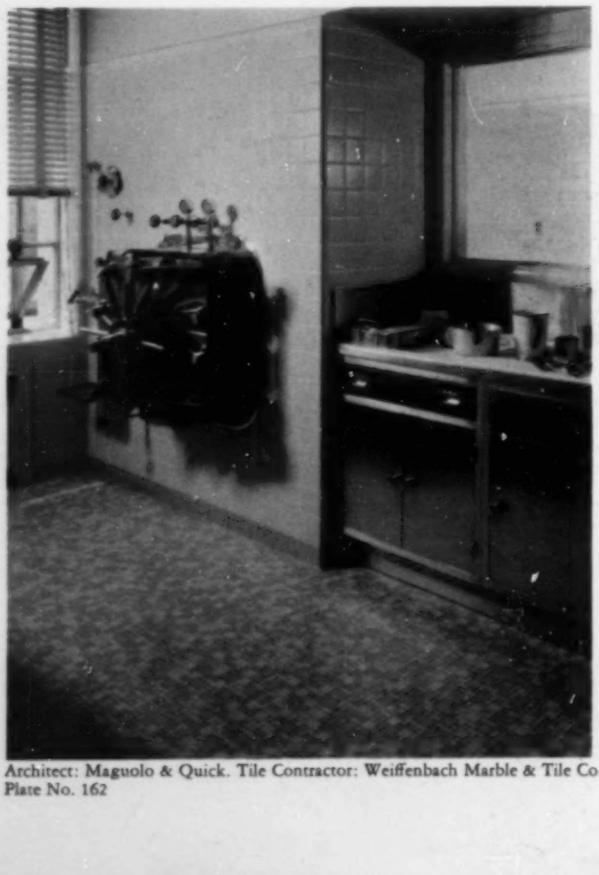

Architect: Maguolo & Quick. Tile Contractor: Weiffenbach Marble & Tile Co. Plate No. 162

Architect: Thorshov & Cerny. Tile Contractor: Twin City Tile & Marble Co. Plate No. 442

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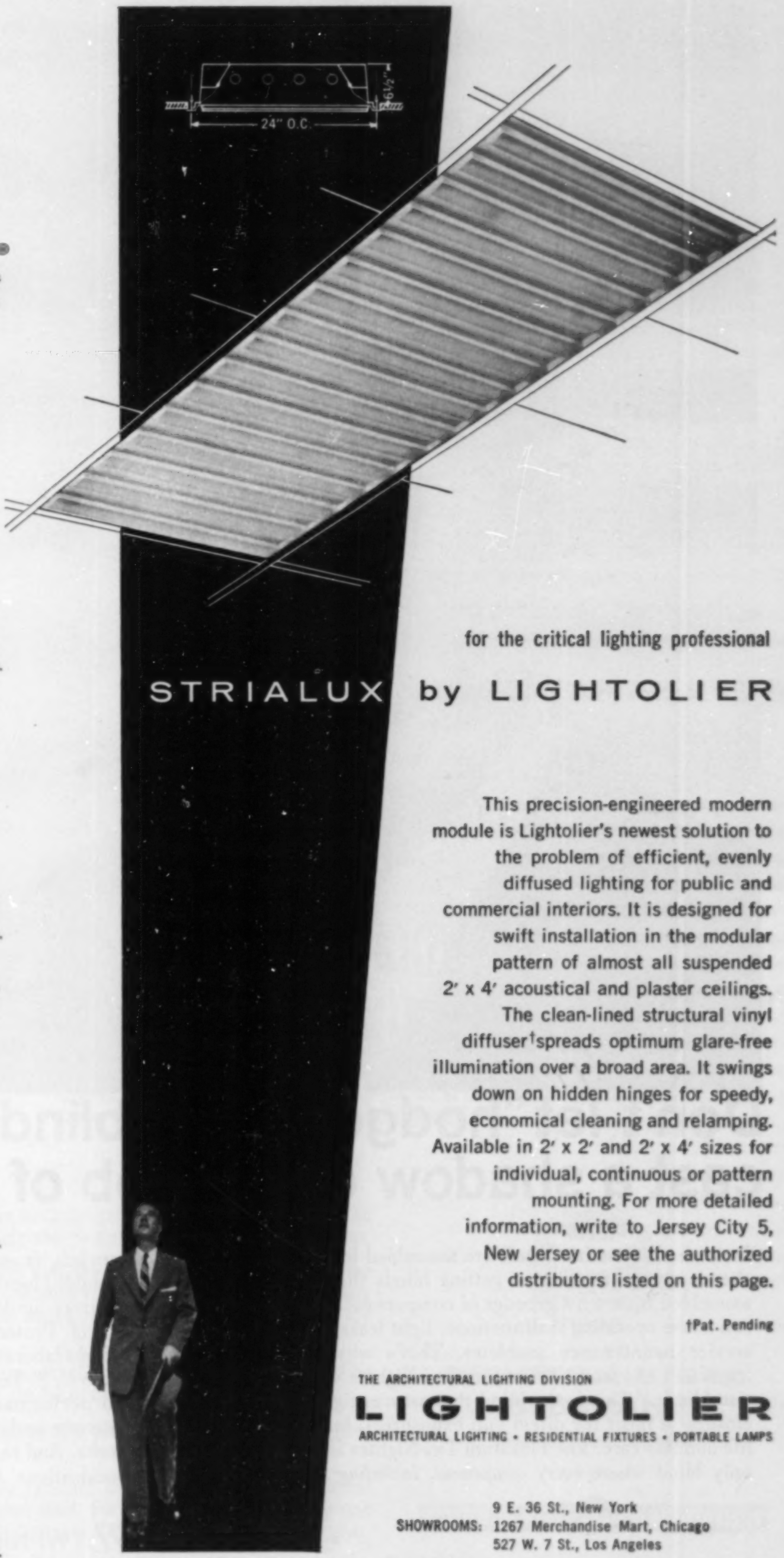

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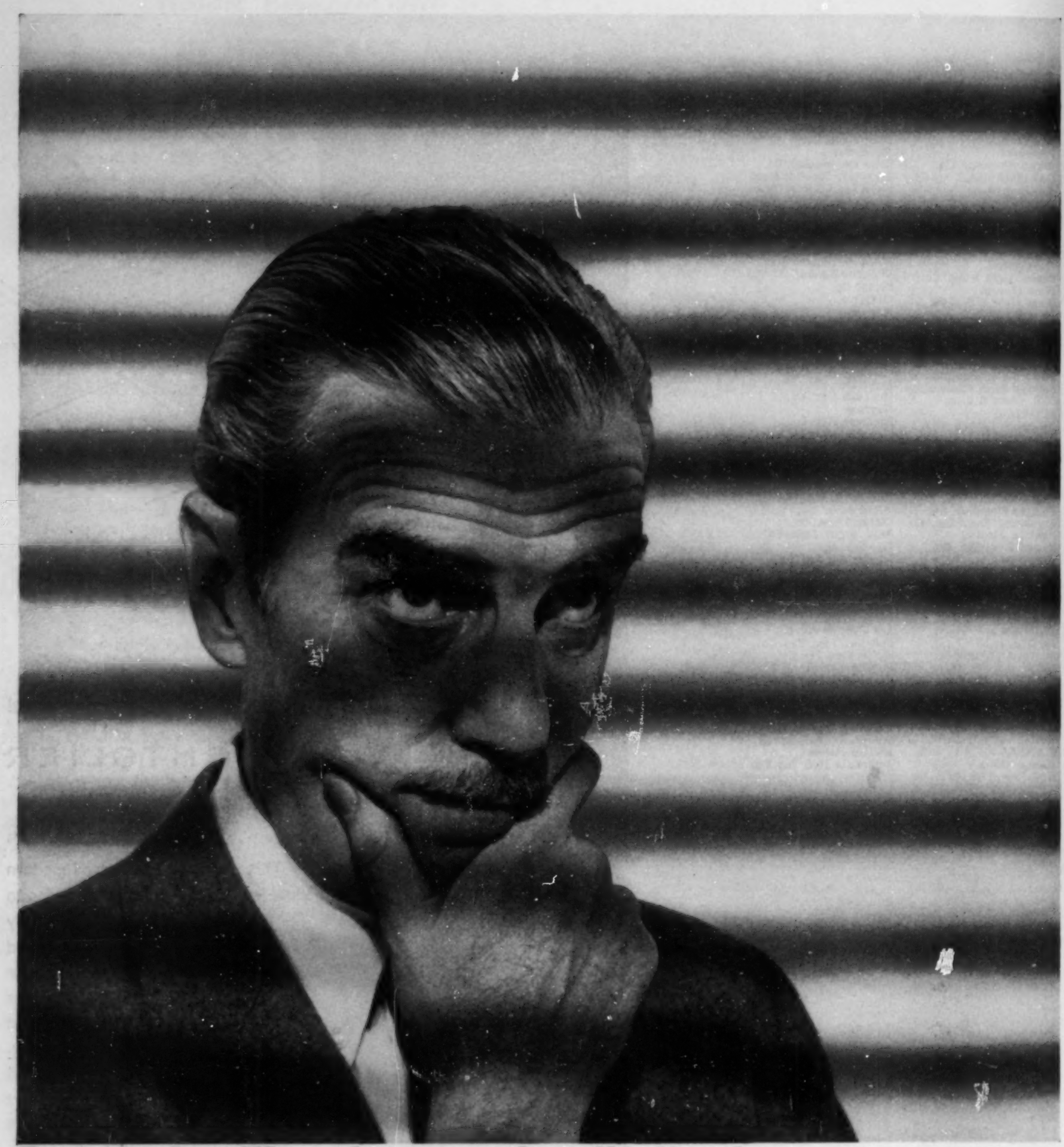

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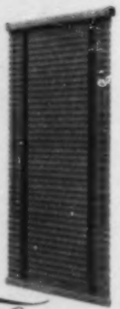

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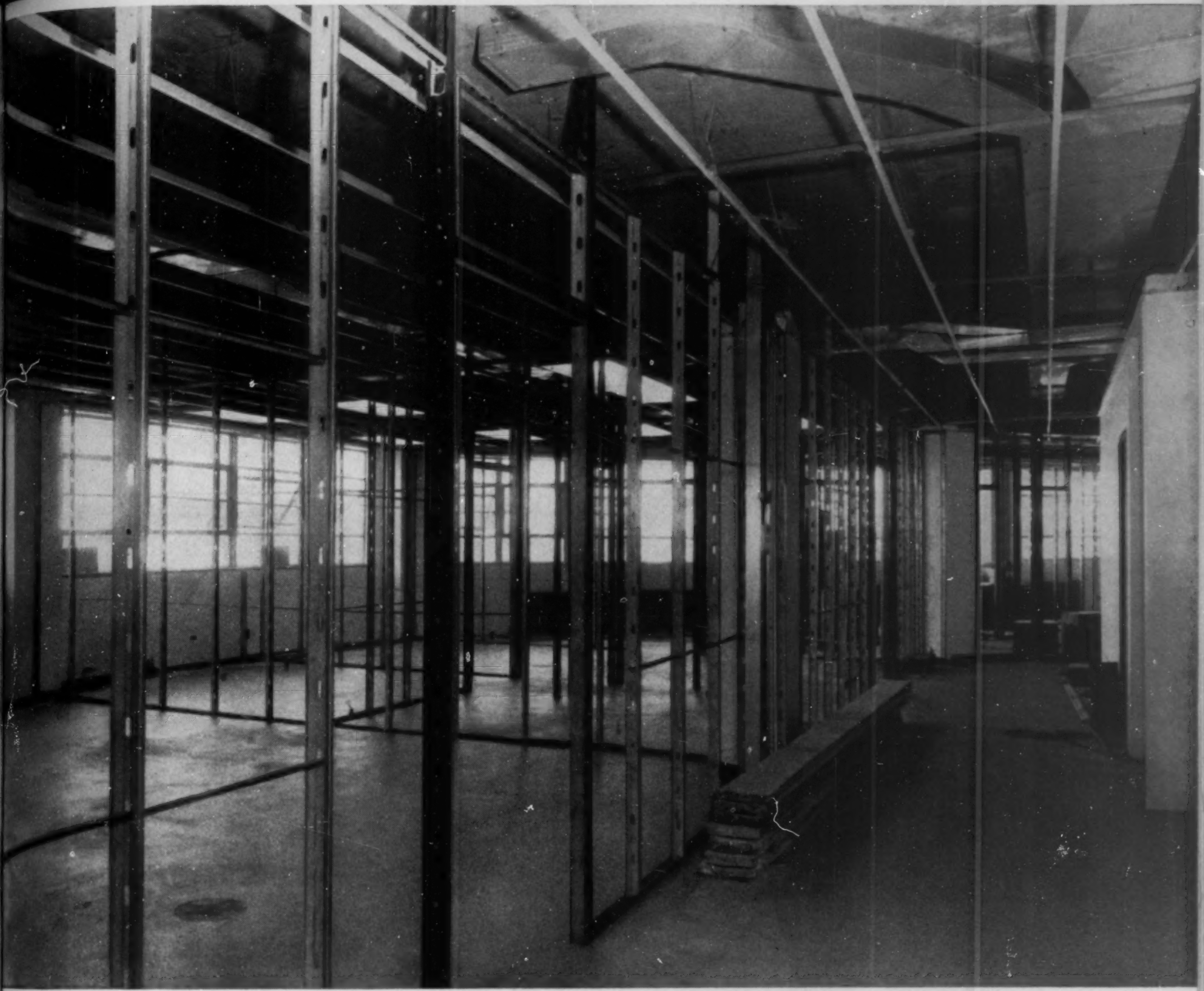

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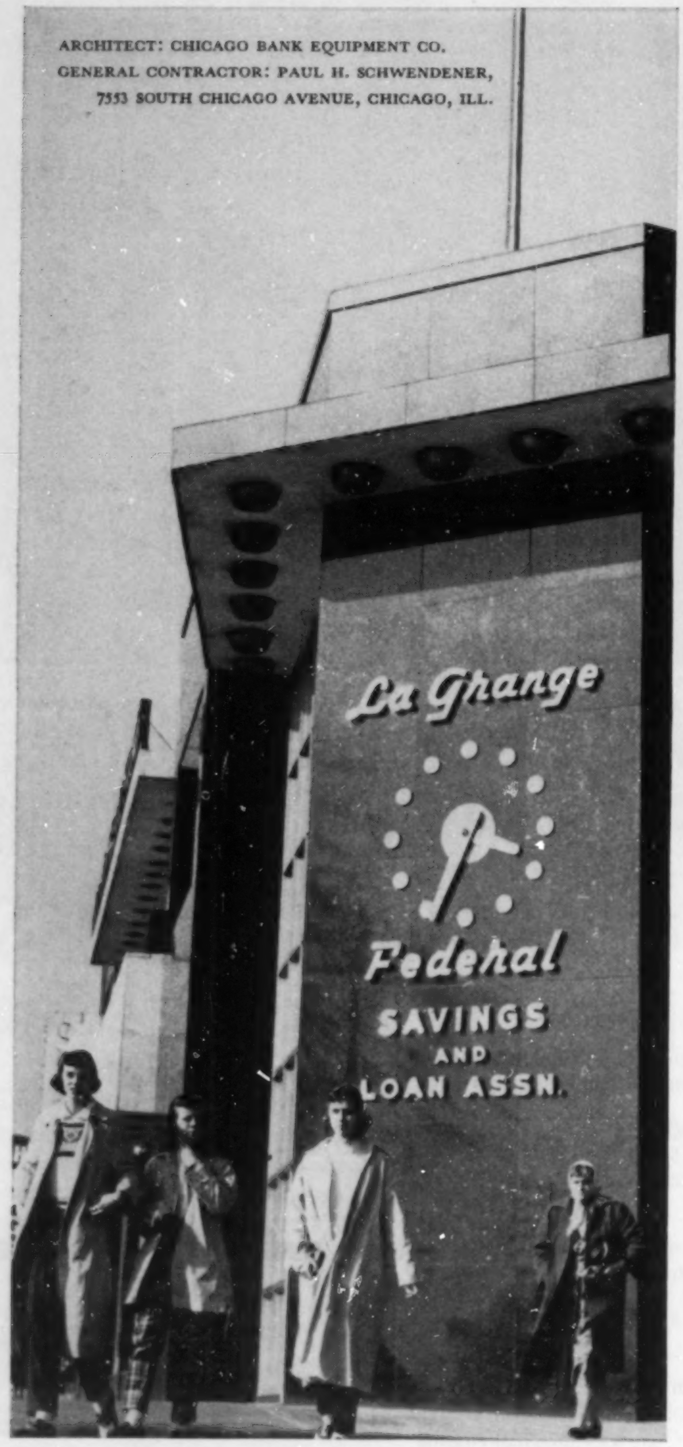
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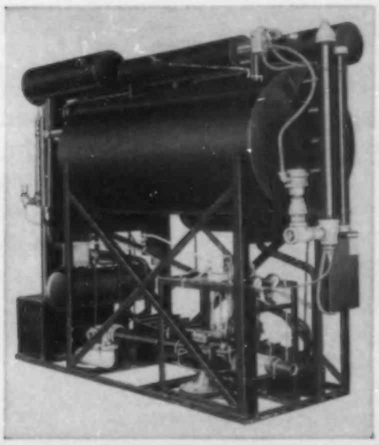

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far as possible, e.g., below $30 a house; 2) individuals, who are more apt to pay recommended minimums (8 per cent to 10 per cent of construction cost) and who will sometime go three to five points higher, especially if they are seeking a name architect. Though many architects contend they cannot make money on residences, small firms do coax a profit out of individual upper-middle-income houses, provided they get at least the suggested fees. However, there is fee-cutting on residences, and one of its causes, as Los Angeles Architect C. M. Deasy points out, is that "it is traditional that the young architect gets his first jobs doing houses, usually at a much lower fee than the suggested minimum. . . ."

Less is not more

All of this points clearly to one of the main reasons for the discontent with the percentage fee today. Theoretically, the minimum fees are supposed to provide enough to cover direct design costs equal to about one-third of the fee, overhead equal to another third, leaving at least a third for principals' time and profit. But when fees are shaved as frequently as indicated above, it takes only simple arithmetic to figure that the architect's profit can drop 37 per cent when his fee goes down from 8 per cent to 7.

This is all the more true when one realizes that architects' costs only rarely approach the theoretical model. Irving Schwartz, a Connecticut accountant who specializes in work for architectural firms, found that many of his clients knew very little about their actual costs and in the absence of specific data were operating on some general, but unrealistically low, assumptions. While there is no such thing as a typical cost for design work—office overhead alone can cause wide variations—some surveys have been made to arrive at average figures. One notable study, in California, showed that 28 per cent of an 8-per-cent fee went to pay for drafting and supervision of construction, 35 per cent for structural, mechanical, and electrical engineering, 15 per cent for overhead (rents, phones, salaries of nontechnical personnel, payroll taxes, insurance, etc.), and about 22 per cent was left for profit and principals' time. On such a basis, of course, a drop of one percentage point in fee can make a big dent in profits, reducing them almost 60 per cent.

Even when the architect succeeds in getting a suggested minimum per cent, he still runs the chance of winding up short if he has to go through lengthy preliminaries with the client or gets stuck in a situation where the client has badly underestimated his needs. "The fee problem," says Donn Emmons of Wurster, Bernardi & Emmons, "is most critical in large jobs where the architect stands to lose a great deal of money." And in this sense the percentage system constantly presents the architect with an unethical temptation—to cover his increased costs by designing more expensive materials into the building.

These shortcomings are obviously so basic to the percentage fee that they could never be corrected by any patch-up of fee levels. Indeed, if a remedy exists at all, it probably lies in the substitution of a completely different fee method. But here there is immediate trouble, for even if one assumes that architects would be willing to change their ways, there is as yet scant agreement on what fee method should be adopted to take account of actual design costs.

Beyond the fee system

There is no shortage of choices. The fee-plus-cost method, in which the fee part of the package is normally reduced to about 40 per cent of the minimum recommended fee is certainly well established, and so is the time-multiplier method which is probably the most popular of all the alternates. Under this system, the architect is paid the payroll cost of technical personnel, multiplied by a factor which covers overhead, principals' time, and profit. Normally, overhead is figured as equal to direct costs, and another half or full point is added to cover profit and principals' salary—making, in all, a multiplier of 2.5 or 3 applied to direct costs. Since clients usually want some lid on what they pay an architect, the multiplier method is frequently coupled with an upset price, and in many cases it works out to just about the same amount of money in the architect's pocket as he would have under the percentage system. But there is the important difference that the fee is calculated on the basis of design costs, not construction costs.

Beyond these direct cost techniques there are any number of other methods, some in use, some just proposed. One applied fairly often is a cost-per-square-foot fee, and this involves an estimate by the architect of the construction cost of the building, based on its complexity, an estimate of his costs and profit to design the building, and the division of these two figures by the number of square feet to be built. An obvious advantage of the method is that it tells the client exactly how much architectural service is costing him and, equally important, since the method is related directly to the complexity of the building, why it is costing him what it is.

Robert W. Cutler of Skidmore, Owings & Merrill is one of many architects who suggest a fee which combines elements of both cost-plus and the percentage system. Cutler would charge on a cost-plus basis for preliminary work on a project, which is the phase where the architect normally takes his beating, then negotiates a fee before working drawings begin. Walter Bogner, professor of architecture at Harvard's Graduate School of Design, has much the same thing in mind when he talks of a client paying an architect a salary, or retainer, during preliminary stages, particularly on projects which may not come off.

But while most architects are willing to concede that these alternative systems have merits, most of them add a condition which makes much

continued on page 178

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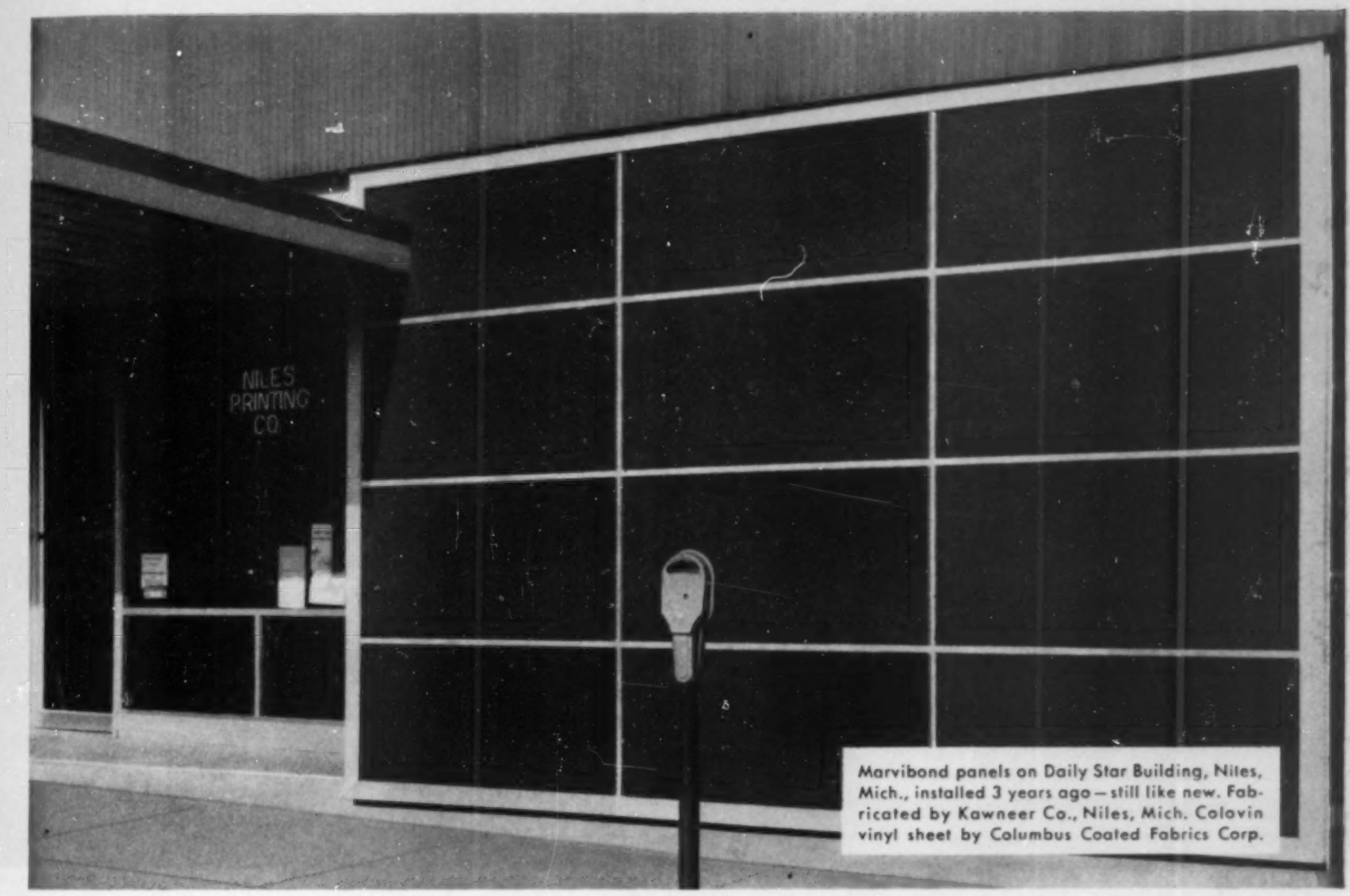

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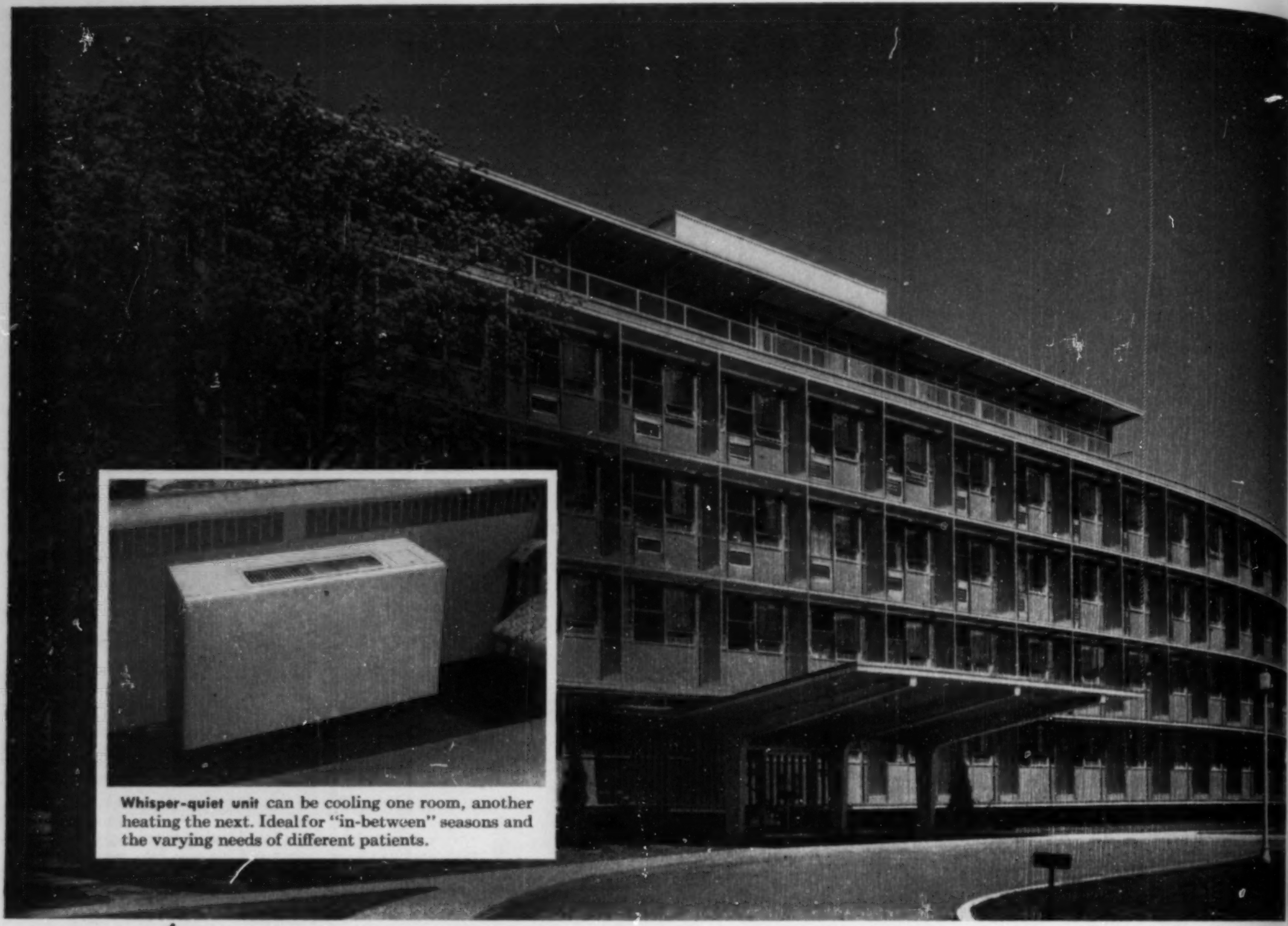

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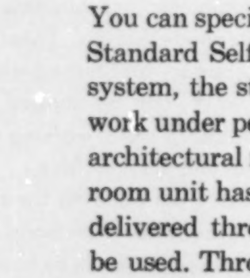
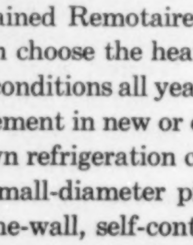
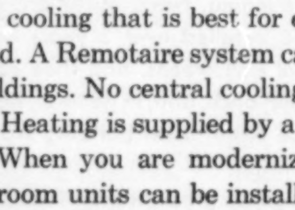


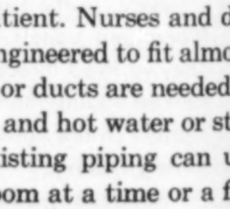
Built-in service sink fitting



Center-set lavatory fitting



Combination lavatory fitting



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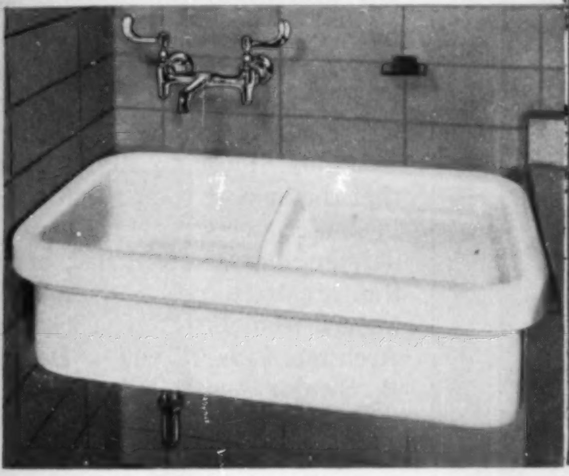

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ARCHITECTS' PAY

continued from page 174

of the talk academic. They simply do not believe that other methods can work as a standard for any but the very large firms which have the prestige to put them over. Speaking of cost-plus, Architect John Carden Campbell of San Francisco says he "would hate to have to sit down and try to talk a prospective client into retaining us if we had no idea of the total cost or prospective fee." This is the prevailing view, and it is buttressed by a sizable amount of doubt which has nothing to do with selling clients. "Any other system but percentage involves too much bookkeeping for me," says Los Angeles Architect Henry Silvestri. "Besides, I won't open my books to anyone—they're my business."

Mainly, most architects believe that the answer to better fees is not in new systems but in a better understanding by the client of what the architect really does for his money today. "Seriously," says Architect Stuart Todd of Dallas' A. B. Swank Associates, "clients are not aware of what fees are. It's not common knowledge, and they are generally shocked when they find out. What the profession has to do is educate the public, not change the system. We would like to see architects picked for the job they can do instead of the price they can do it for."

That such education is undoubtedly needed shows from the remark of a Chicago home builder who says that "my feeling on stock residential plans is that the architect gets 10 to 20 per cent more than he deserves. The average price he should charge should be $5 an hour; this is all you can expect to pay the other trades." But whether mere tutoring—even tutoring which would convince the public that the architect with five years' college education is hardly a tradesman—would be enough to raise fees is questionable. Certainly, most architects feel percentage fees could not be raised now. Someday, therefore, the profession may have to answer the question that the minority is raising now: whether the fee system is punctured beyond patch-up, and a totally new replacement is needed. **END**

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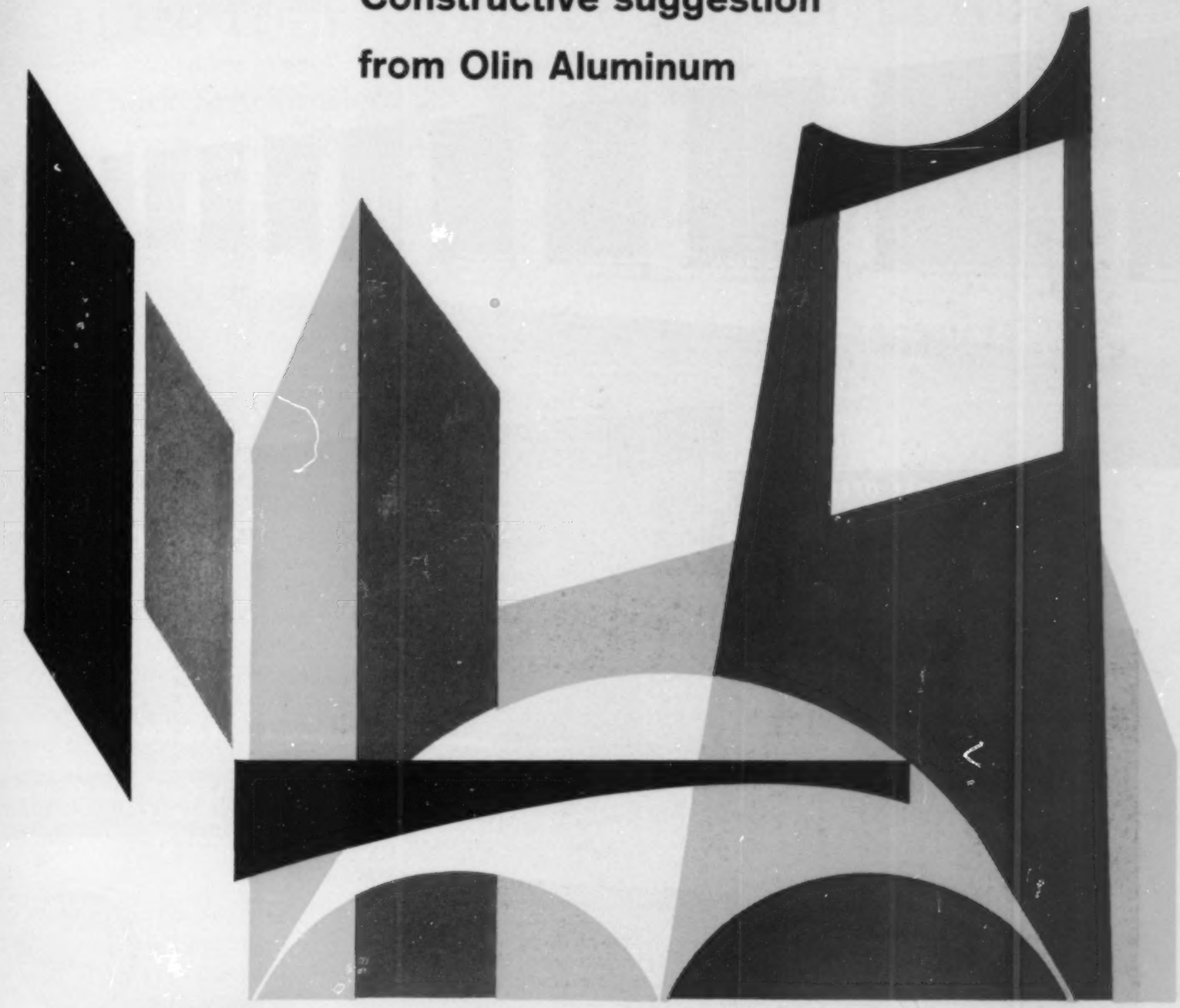

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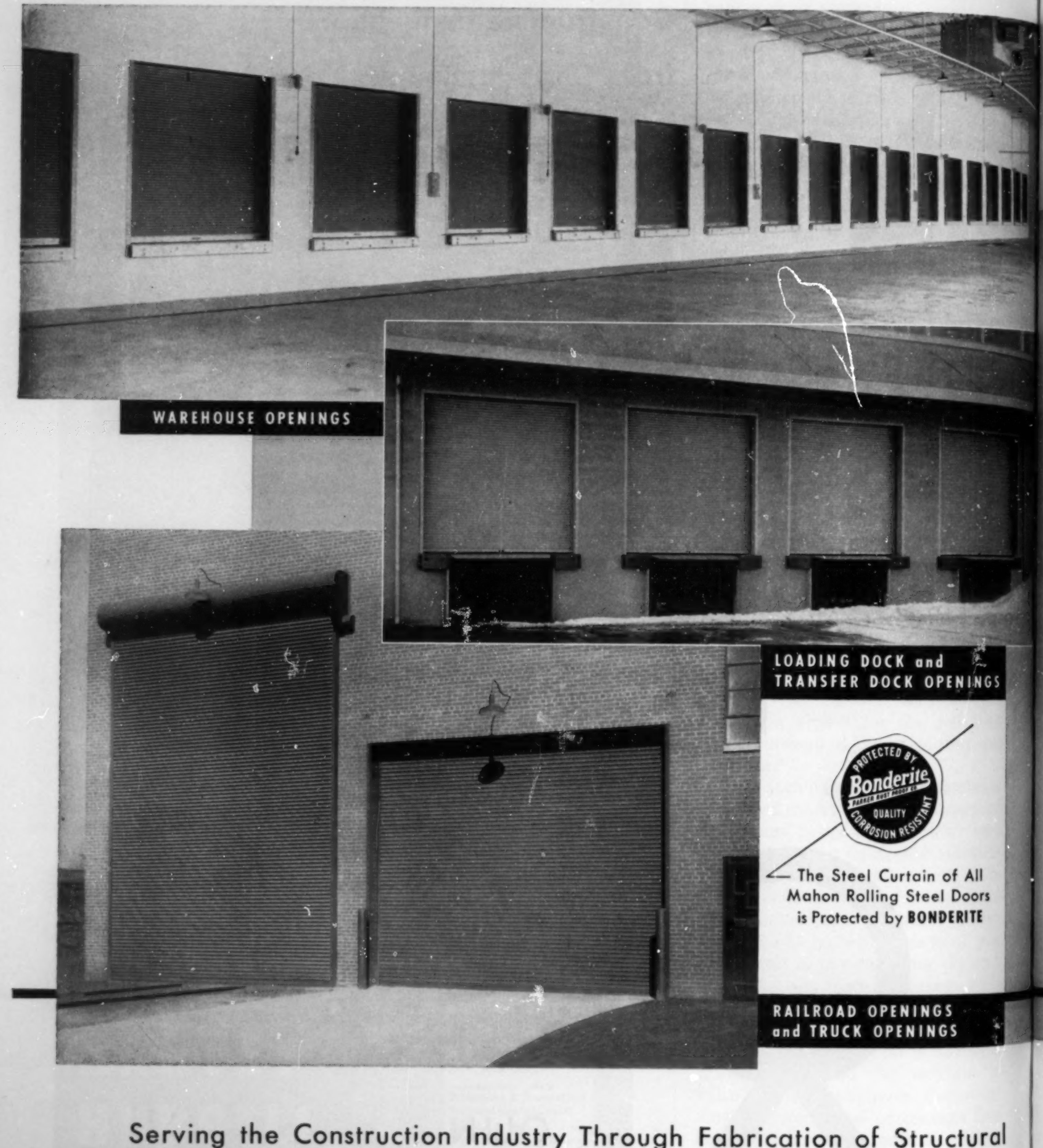

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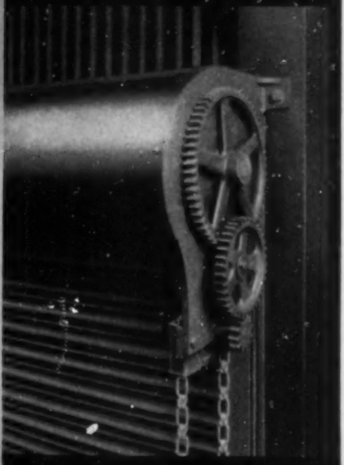

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marshal their arguments to Congress for whatever legislation is needed to give cities and their citizens more equitable tax treatment. This might be achieved in two ways: 1) exemption from, or reduction of, corporate or personal taxes on income derived from rental housing; 2) tax deductibility privileges for families who live in rented homes similar to that granted to home owners.

Until now municipal officials have not paid much attention to this problem, partly because of the complexities of the situation, and partly because the problem was not a critical one during the acute postwar housing shortage, when everyone was striving to spur construction of any kind of new housing anywhere. And yet the outlines of the problem were seen more than a decade ago by at least two observers: FORUM's Economic Consultant Miles Colean and the late Randolph Paul, a tax expert who served as Assistant Secretary of the Treasury. In 1946 they wrote:

"Equity investment in rental property stands at a distinct disadvantage to other outlets for capital . . . . The yield is relatively low. . . . Because of slow capital recoverability, equity investment in rental property is usually accompanied by a large proportion of long-term mortgage debt. This creates a heavy burden of fixed charges which must be met with an income that is more violently variable than for corporate income generally. . . .

"To these inherent drawbacks, the corporate income tax adds a further disability. . . . As it stands, the corporate income tax almost completely blocks true equity investment in rental housing property by realty corporations . . . .

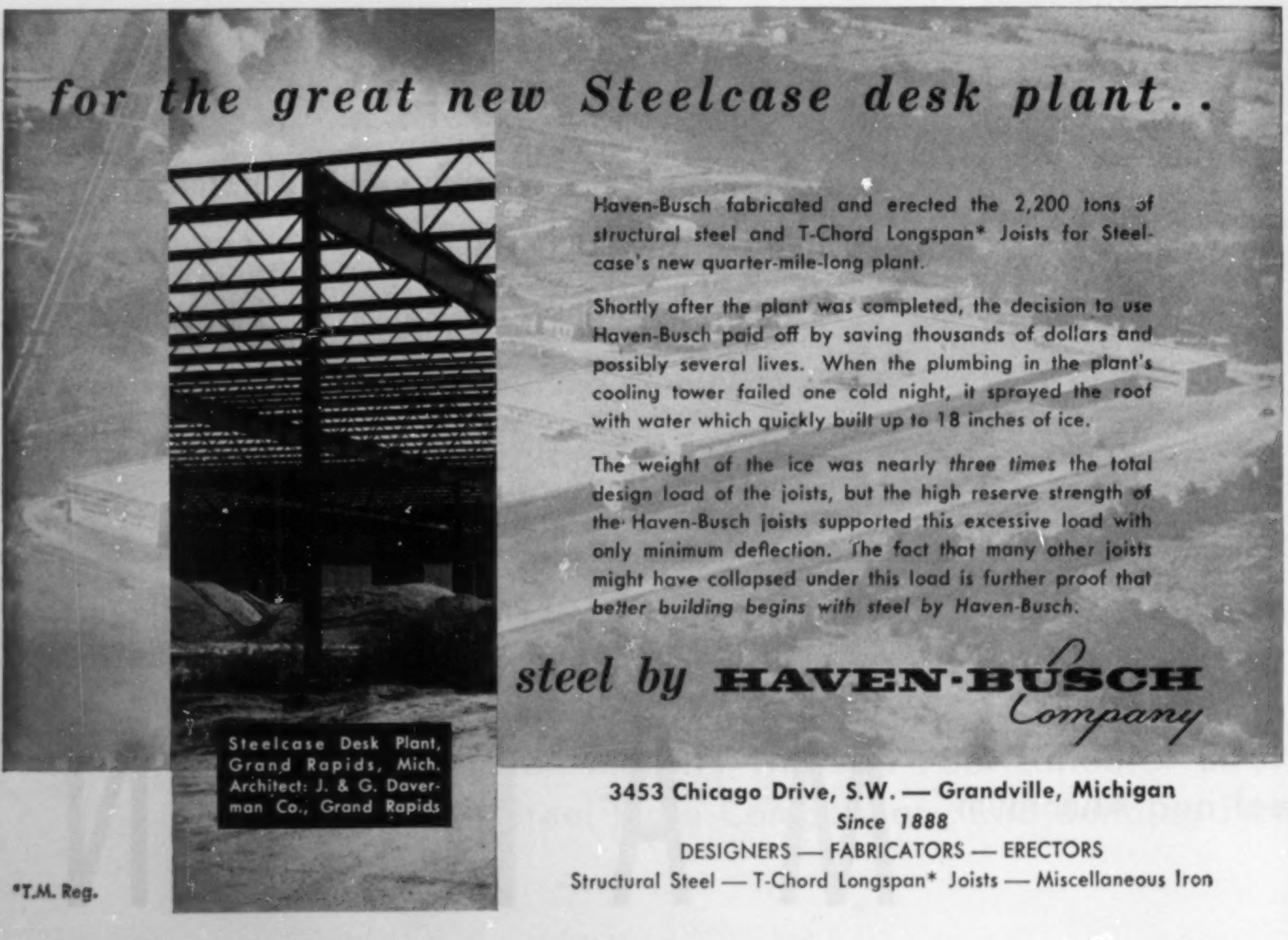
"Because of the great present and future need for this type of investment, it would seem reasonable to view rental housing corporations with special consideration. The elimination of the income tax on such corporations would be the simplest way of relieving the disadvantage to investment in an already heavily taxed form of enterprise."

Today, after a decade of further experience in the housing field, Colean says he now feels the most practical single way to promote more urban rental housing would be prompt enactment of a proposed law to give real estate investment trusts the same "conduit" tax-exemption privileges enjoyed by investment securities trusts (FORUM, December 1956).

Deductibility for tenants

The other principal way that rental families could be given tax treatment more nearly like home owners would be through deductions. And this could be done without re-

continued on page 186



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Steelcase Desk Plant, Grand Rapids, Mich. Architect: J. & G. Daverman Co., Grand Rapids

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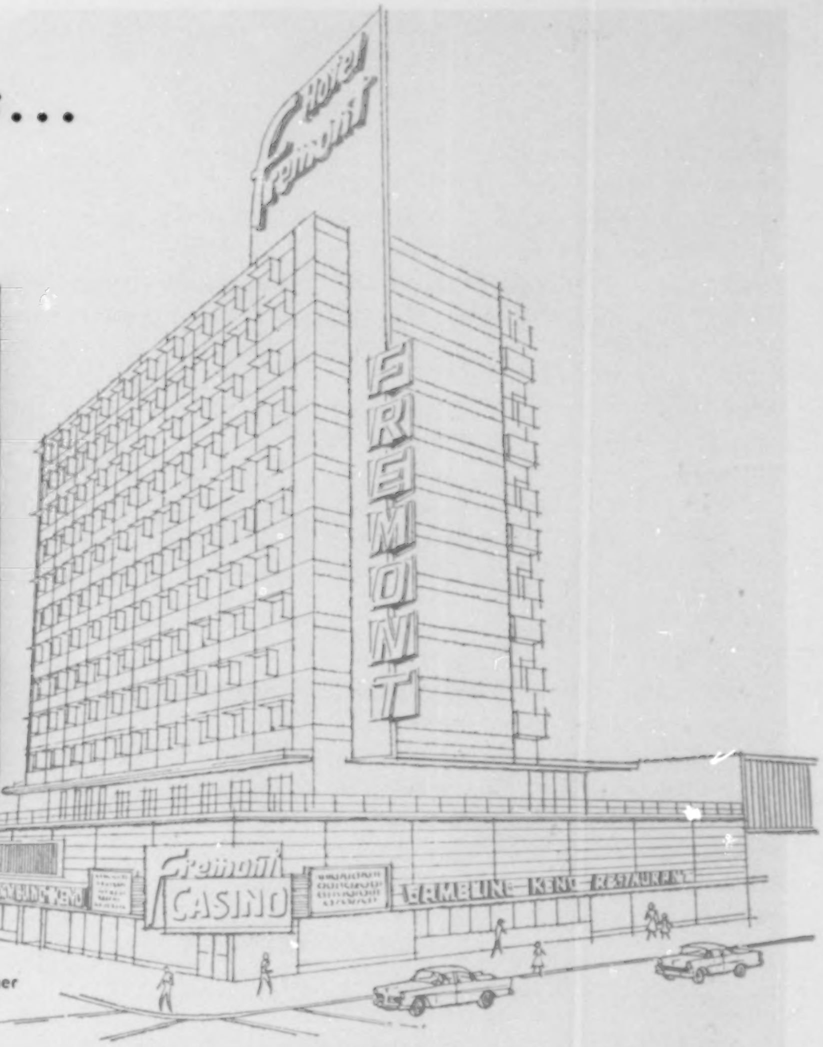
building design changes . . .

30 Years Ago:
Ambassador Apartments,
Gary, Indiana
Architect: I. M. Cohen
Chicago



Today:
Fremont Hotel,
Las Vegas, Nevada
Architects: McAllister & Wagner
Los Angeles

but
KOPPERS COAL-TAR PITCH
is still the best roofing material

When constructed in 1928, the Ambassador Apartments of Gary, Indiana was representative of current design trends in multi-story dwellings. The vast changes in design thinking and materials of construction over the intervening years are obvious when this building is contrasted with the modern Fremont Hotel of Las Vegas, Nevada.

Yet one design feature is the same in both these buildings: the flat roof decks are protected with 20-year Bonded Koppers Coal-Tar Pitch Built-Up roofing. Even though the roof on the Ambassador Apartments has *outlived its bond period by 10 years,* no extensive repairs have been required since the roof has been in place, according to Mr. Jack Lazerwitz, acting manager and building owner representative. No wonder architects specify the unequalled protection of coal-tar pitch built-up roofing for modern buildings, too.

The answer to the outstanding performance of coal-tar pitch roofing materials is in the superior waterproofing ability of coal-tar, plus its unique "cold flow" characteristic: the ability to heal small surface cracks and checks in built-up roofs before they can cause trouble. Together, these advantages make a coal-tar pitch built-up roof the most impermeable roofing membrane known for durable, maintenance-free building protection.

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Architect: Whitney Biggar, A.I.A., Bakersfield, California

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ducing the federal taxes now paid by landlords on the income produced by rental property. In effect, the landlord is really only an agent or conduit for real estate taxes and interest payments. He collects (in each rent) money that he later uses to pay these obligations. The money he collects from his tenants is counted as part of his gross income, and when he pays it to the bank or local tax collector, he deducts it again from his gross income in determining his taxable income. Therefore, the landlord's federal tax position would be no different at all, if he was authorized to give each renter a statement once a year certifying what portion of his rent was used for taxes or interest, and the renter, who in fact was the source of the money to cover these payments, was then allowed to deduct this sum in computing his taxable income—the same as a home owner.

Even though the elimination of tax discrimination against rental families, as described above, is probably a long time off, there is another way for couples and families to live in the city without having to bear the expenses of federal taxes and an investor-owner's profit, and also to gain home-ownership tax deductibility benefits. That is through cooperative housing. The big drawback here, however, is that high costs now make it necessary for most cooperative housing in central cities to be conventionally financed, thus requiring substantial down payments. A large volume of liberal-mortgage, FHA Section 213 cooperative housing, more than 17,000 units, has been erected in New York City, mainly in outlying areas where land costs are low enough so total costs stay within FHA's maximum apartment mortgage limits. The greatest need of big cities in this field is for higher FHA limits (present basic limit: $2,700 per room), or liberalization of conventional mortgage terms on cooperative buildings to serve the wide middle-income group between the FHA market and luxury market. Also required: FHA-insured financing that would facilitate the cooperatizing of existing middle-income apartment buildings.

If changes are not made in the discriminatory tax legislation that now works against cities, says a leading New York apartment builder, cities themselves would benefit by doing whatever they can to stimulate and encourage cooperative housing. The federal tax deductibility privileges that apply to cooperatives would then reduce the net housing costs of city families, give them more money to spend in the city and less reason to move out to suburbia, and it would not cost cities any real estate tax revenue. Until such time as the federal government sees fit to equalize the tax burden of owners and renters, this conversion of "tenants into owners" would seem to be the most promising way for the cities to combat the spread of urban tax blight. END

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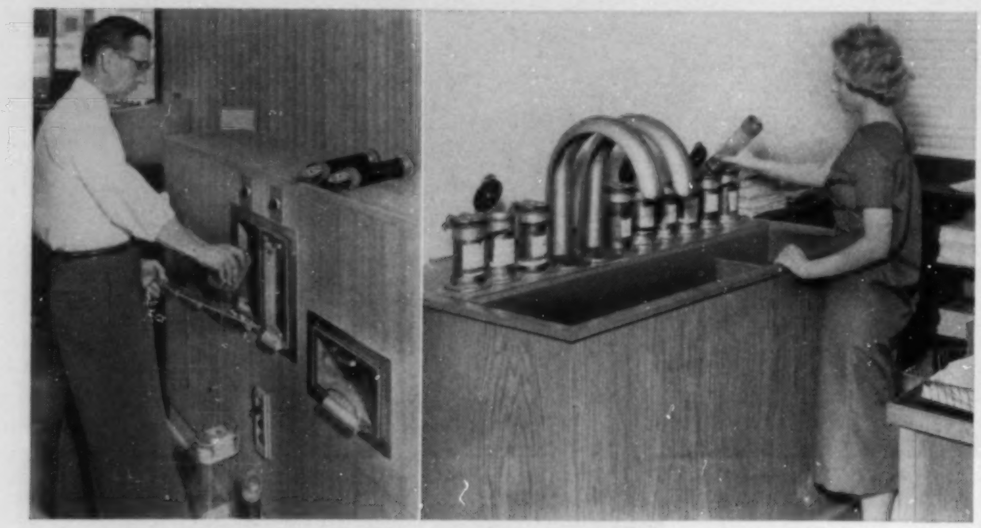

Left: Auto-Bank — typical station for connecting drive-in main banking facilities for transfer of funds. *Right:* Single door up delivery terminals with goose-neck. Combination inlet for handling orders, parts, etc.

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Left: Nurse inserts carrier. System handles test tubes, charts and other hospital items. *Right:* Pneumatic tube station in laboratory office of steel mill.

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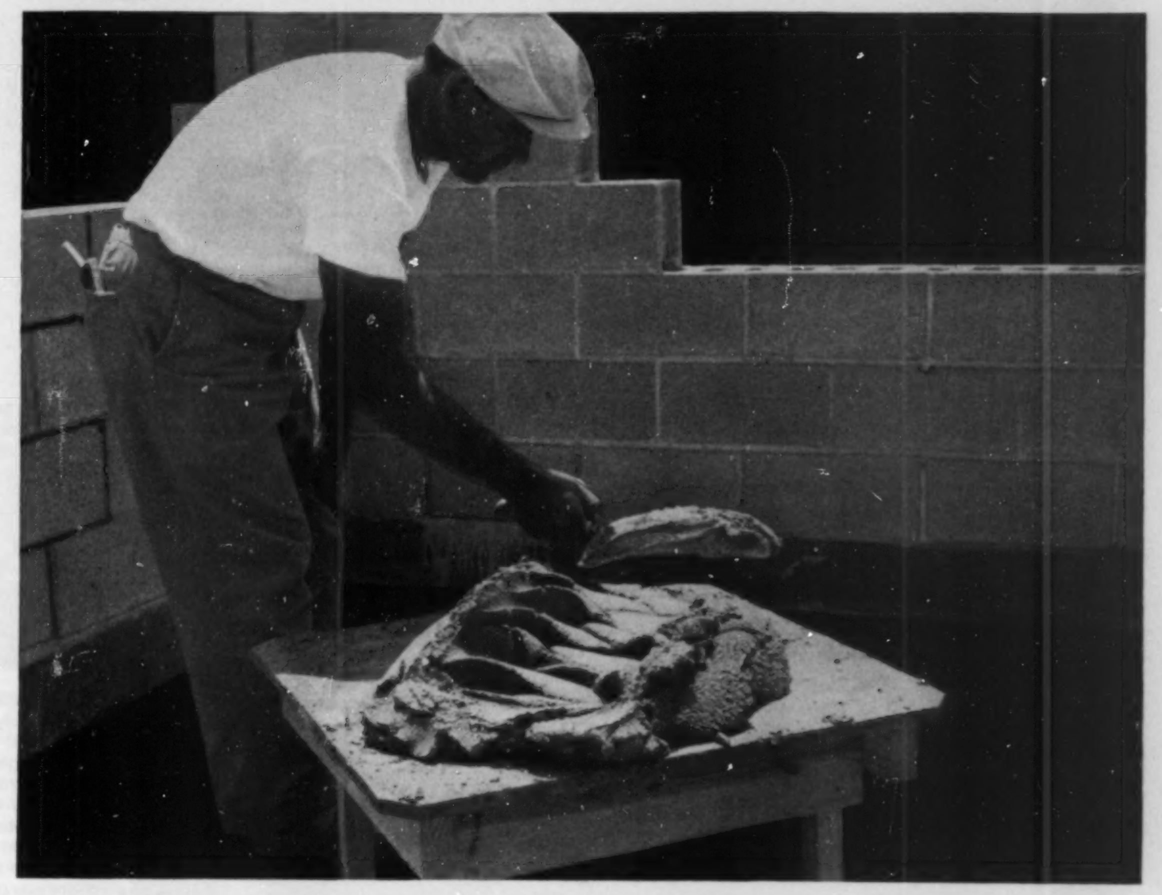

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The main building—which contains some 400,000 square feet of floor space unbroken by a structural column—is penetrated by four garden courts, 72 feet square, making it possible for nearly all employees to be within 35 feet of a window. The cafeteria juts out from one end of the main building, cantilevered 15 feet over a pool. At the other end of the building, across a glass bridge, is a special department wing.

Once inside the metal and glass walls the stylish gleam of gracious architecture comes alive.

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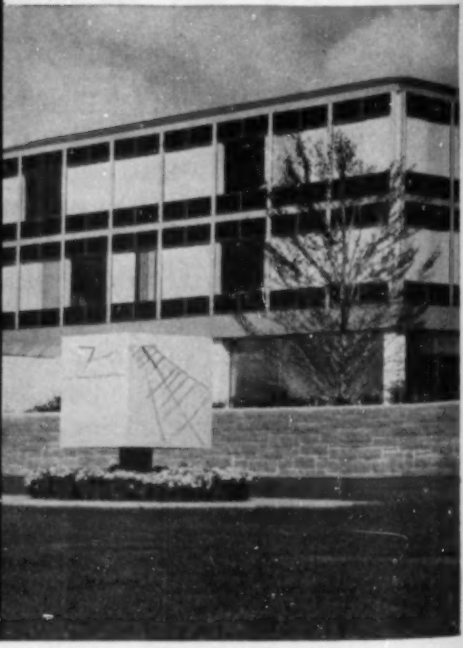

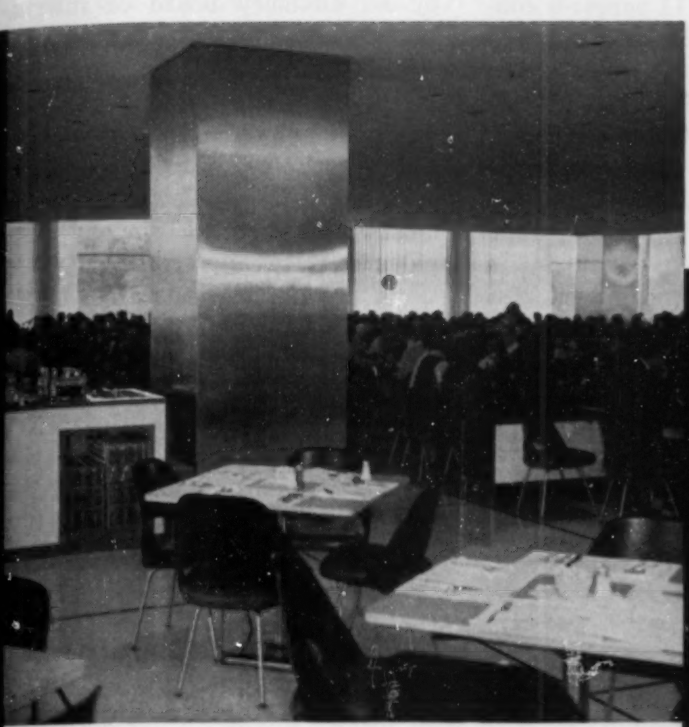

STAINLESS STEEL ADDS STYLE AND CHEER to the 800-seat dining room. Table and chair supports, column covers, and food-handling equipment of stainless steel assure attractive clean surroundings. All food-preparation and food-service equipment in the kitchen and counter pick-up areas are fabricated of stainless steel for peak sanitation and attractiveness. Dishwashing facilities are stainless steel, too, to resist corrosion and abrasion.

DOORS FRAMED IN STAINLESS STEEL open onto one of the four garden courts that penetrate the main building. Although receiving heavy use, the doors resist scuff, scratches, and dents—thanks to the metal's strength and toughness. Like all the entrance doors, the first level and upper level fixed glass windows are framed in stainless steel to resist corrosion and weathering.

STAINLESS STEEL FOOD-SERVING COUNTER accommodates some 2,000 employees each day. The cafeteria is completely equipped with stainless steel—from refrigerator doors and back walls to steam tables, display cases, and working areas up forward. In the working areas, cleanliness is easy to maintain since everything with which food and dishes come in contact is made of easy-to-clean and keep-clean stainless steel. Republic offers architects competent metallurgical and engineering help in obtaining the best possible results with ENDURO Stainless Steel.

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NELSON *continued from page 119*

volved on a 'this-must-be-done-now basis,' " says Nelson. "Before I realized it, we were spending a great deal of time on the job. So an arrangement was worked out for me to go on a kind of unofficial two years' leave. They needed someone to wrestle with the immediate problems—I was that sort of guy."

Lincoln Center for the Performing Arts is to be a complex of five major buildings on 11 acres: a concert hall, a ballet theater, a repertory drama theater, and new homes for the Juilliard School of Music and New York's Metropolitan Opera (which has been house-hunting since the twenties). Supplementing these will be ancillary buildings and facilities, including a restaurant, a museum-library, a dormitory for Juilliard, and a 1.5-acre park with parking garage beneath. The overall physical layout has been planned by an advisory board of international architects. Coordinating architects have been and continue to be Harrison & Abramovitz. The complex, on which construction will start next year, is to be set in the middle of one of New York City's most traffic-tangled, socially polyglot renewal-ready areas.

As unpaid representative of the owners on this highly unusual building project, Nelson is speaking for a somewhat more complicated set of motives than he is at New York Life. Indeed he is speaking for all the many-purposed contributors to the total $75 million (close to $30 million has been raised to date). Nelson's responsibilities are, correspondingly, less well defined. He is equipped with the title Executive Director, Construction, but his activities range from the drafting of contracts with architects to negotiating with federal authorities.

Just as Lake Meadows introduced Title I, a low-cost housing plan, and a development method totally new to Chicago, so Lincoln Center is bringing to New York an even more experimental way of healing its deep-rooted city troubles. At this point it is an unanswered question whether the delight of the five cultural institutions in finding space for their new center will be shared by the citizens of the area. Just as Nelson worked hardest in Chicago to translate economics and architecture into a workable pattern of neighborhood, so is the realization beginning to grow that that will be the biggest part of his job in New York.

James Felt, chairman of the New York City Planning Commission, is optimistic that Nelson is the right man to get the delicate job done of putting a cultural monolith in the middle of a semi-slum and making it work as a city unit. "Otto Nelson was a unique breed of person even before urban renewal brought him to the fore. He has the background, the temperament, the dogged perseverance, the fearlessness, and sense of humor that are necessary for the job. We can't have a city rebuild itself without pain. Otto will feel the pain, will work with it, will be able to turn it into something that brings new life." END

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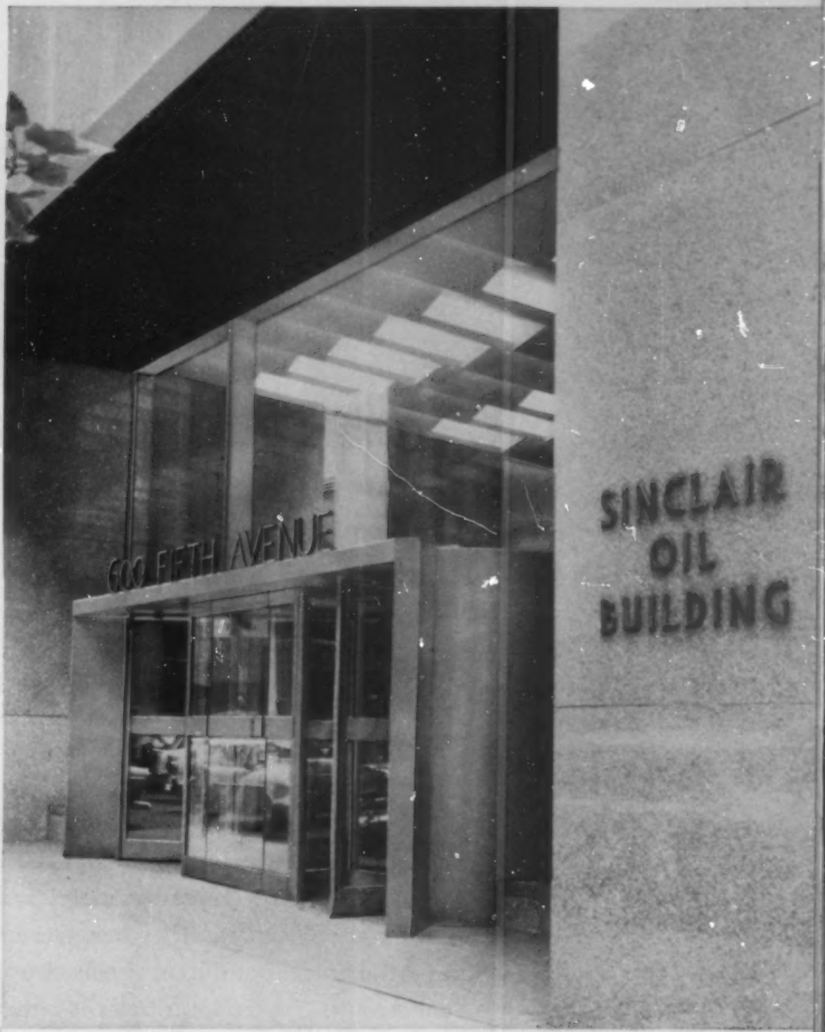
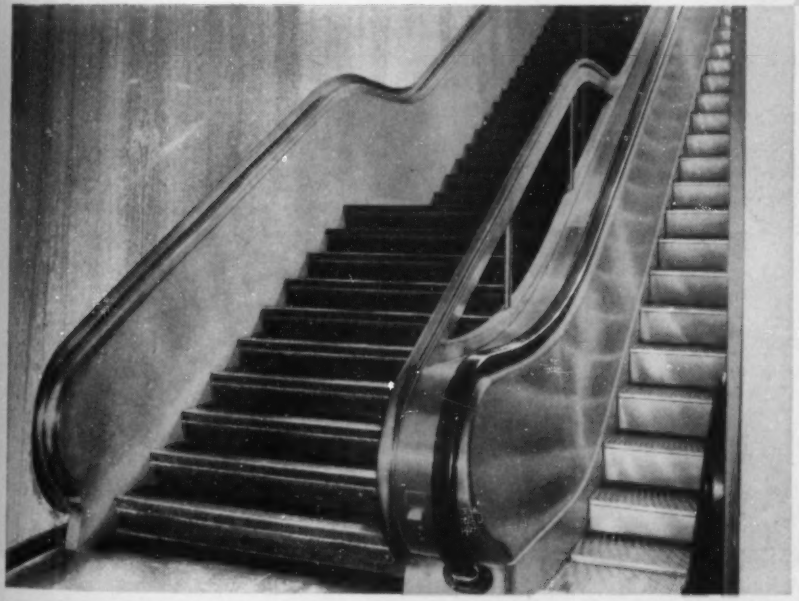
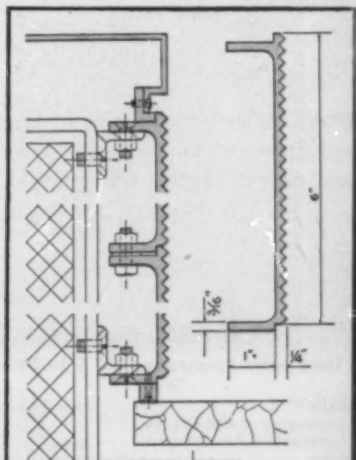




The main entrance (above) of the Sinclair Oil Building. Architectural bronze forms the door openings and housings, and frames the glass panels above.

Escalator and stairs (left) from lower-level concourse have architectural bronze paneling and trim.

Architects: Carson & Lundin, New York. **Engineers:** Edwards & Hjorth, New York, and Jaros, Baum & Boles, New York. **General Contractor:** Turner Construction Co., New York. **Ornamental Bronze Fabricator:** C. E. Halback & Co., Brooklyn, N. Y.



Elevator lobby (left) has an extremely interesting wall treatment. To complement the marble, the wall surrounding the elevator doors is composed of serrated architectural bronze extrusions. Detail drawing (above) shows how extrusions are fastened to the wall construction. Close-up photo (right) indicates the pleasing vertical striated effect.

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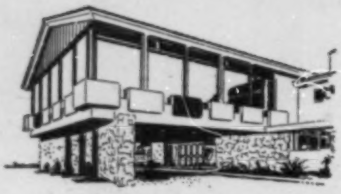

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La Jolla Country Club, La Jolla, California, showing ceiling of Acousti-Celotex Stria-Colored Steelacoustic* Panels on a T & T* Suspension System. **Architects:** Paderewski, Mitchel and Dean, San Diego. **Acousti-Celotex Contractor:** Hackett Acoustics and Specialties, Inc., San Diego, Cal.

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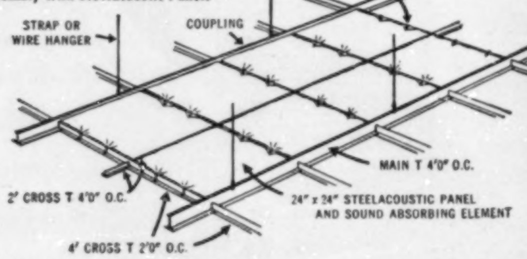
Celotex T&T Suspension System Assembly with Steelacoustic Panels



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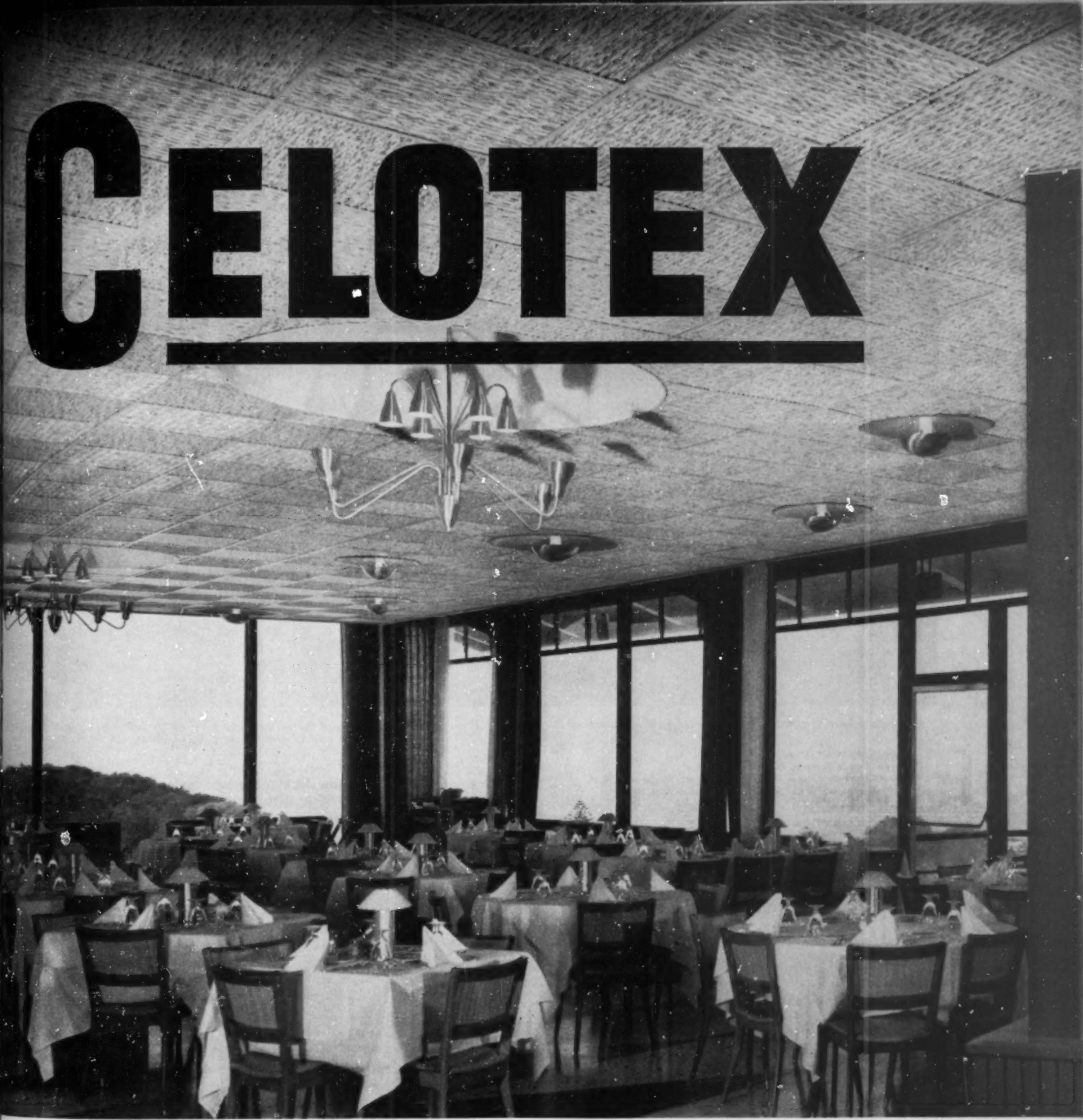

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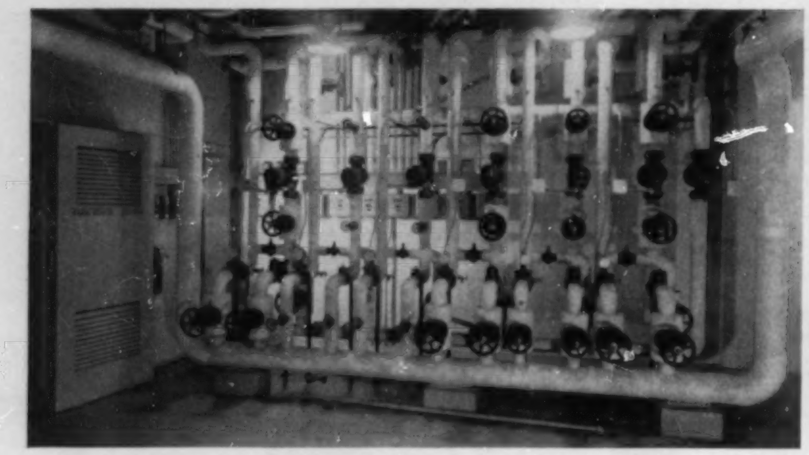
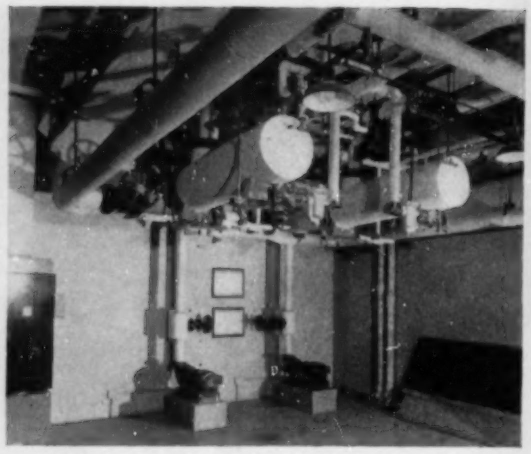


Secondary heating circuits are circulated by this battery of B&G Booster Pumps.



The piping of the primary circuit does not leave the apparatus room and is circulated by B&G Universal Pumps.

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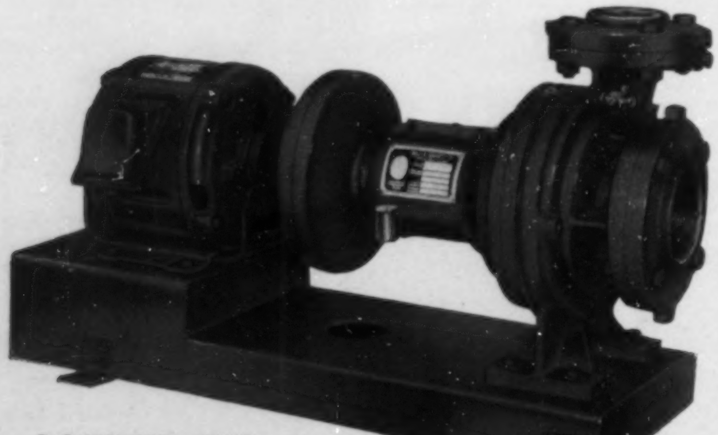

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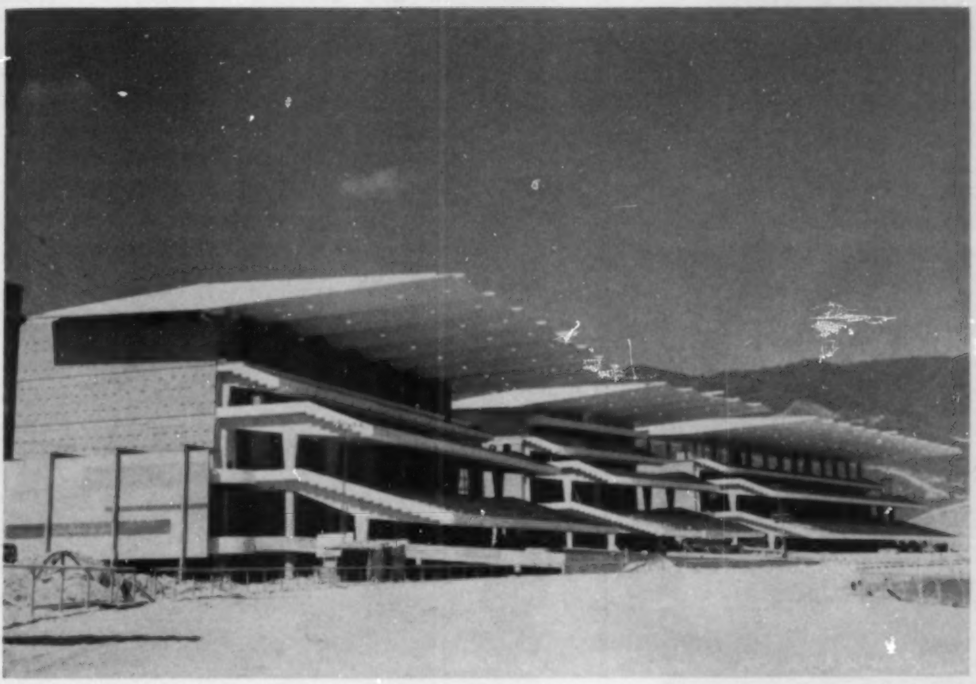
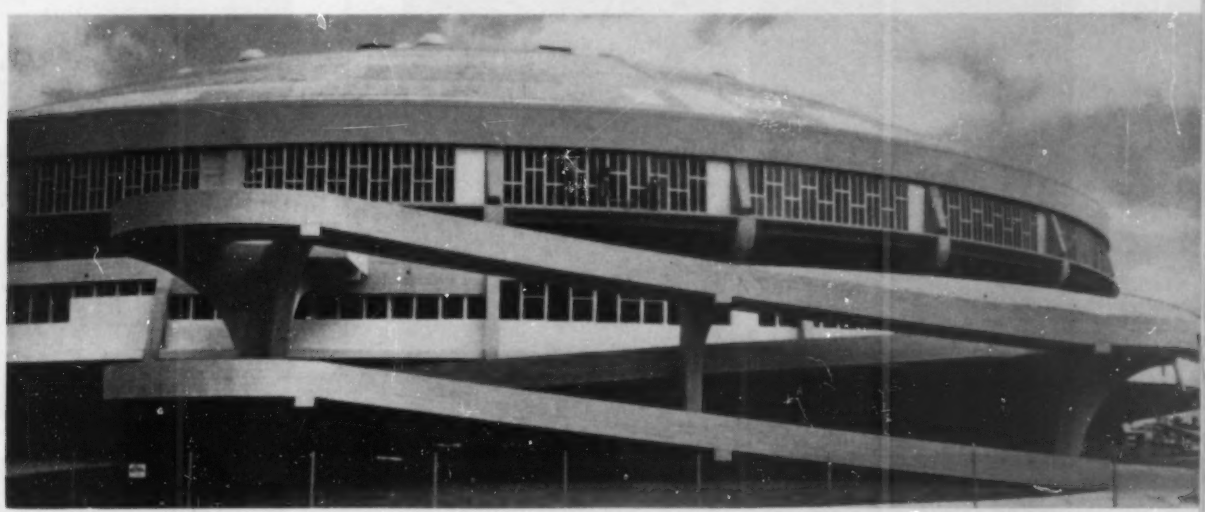


HAMILTON WRIGHT

VENEZUELAN HIPPODROME

Like many a boomtown, Caracas has been outgrowing its cultural and recreational amenities. Latest facility to need updating: the national horsetrack, previously located downtown. Now moved 15 miles out in the suburbs, the new track, called La Rinconada, has one of the largest grandstands (35,000 seats) in the world. Los Angeles Architect Arthur Froehlich, an old hippodrome hand (New York's Aqueduct Raceway, Hollywood's Park Turf Club), was also able to find room beneath the scalloped, pierced, concrete roofs for three restaurants, several elevators, lounges—and a dance hall.



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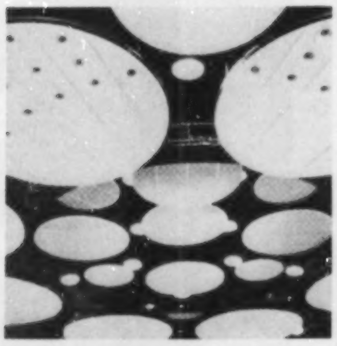
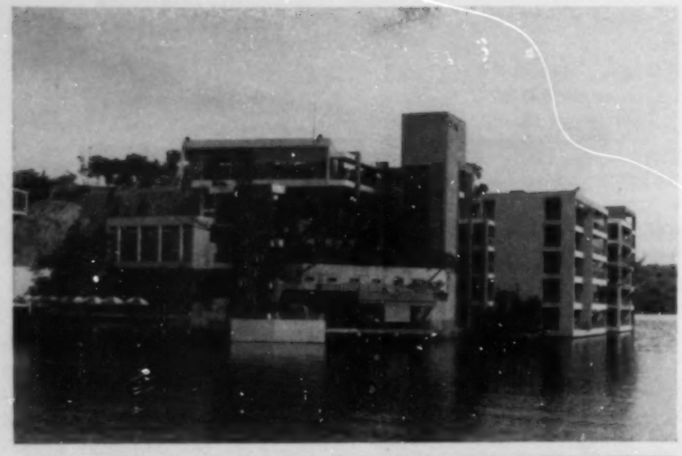
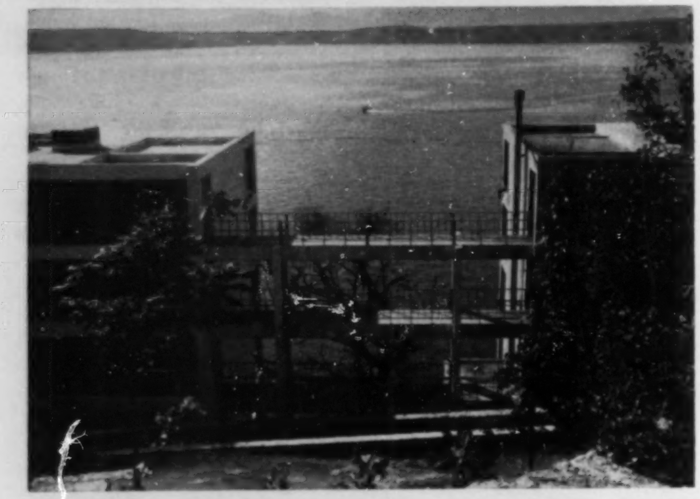
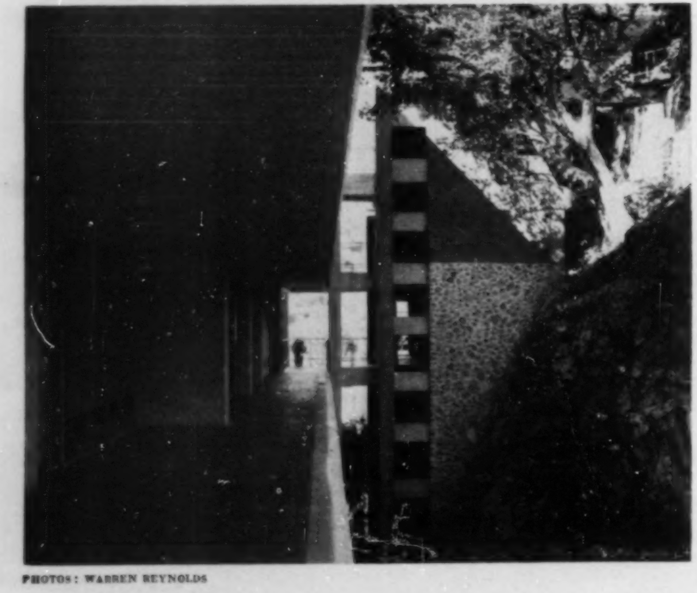


CUBAN CIRCUS

Despite Cuba's recent political difficulties, the dictatorial tradition of building monumental circuses for mass sports goes forward unchecked. In February a gigantic "Sports Palace" was opened, set neatly into a corner of President Batista's "City of Sports." The concrete palace, supported by 48 columns in two concentric circles, has a diameter of more than 300 feet, seats some 15,000 enthusiasts. An unusual feature of the building is the "clouds" suspended from the roof (left), serving as light and sound baffles.







PHOTOS: WARREN REYNOLDS

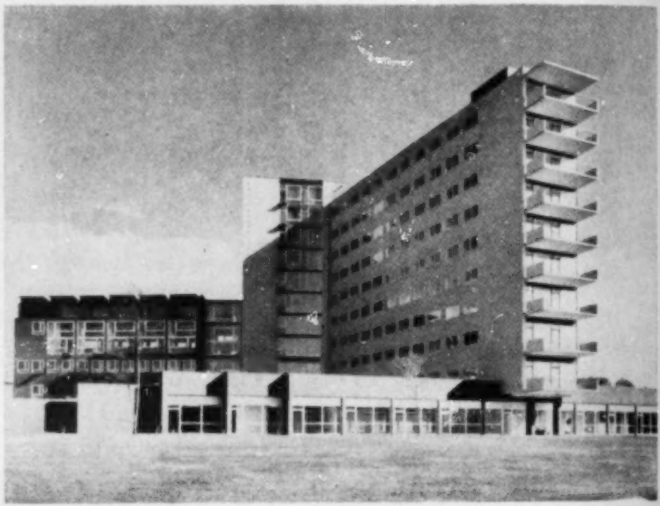
MEXICAN CLIFF-HANGER

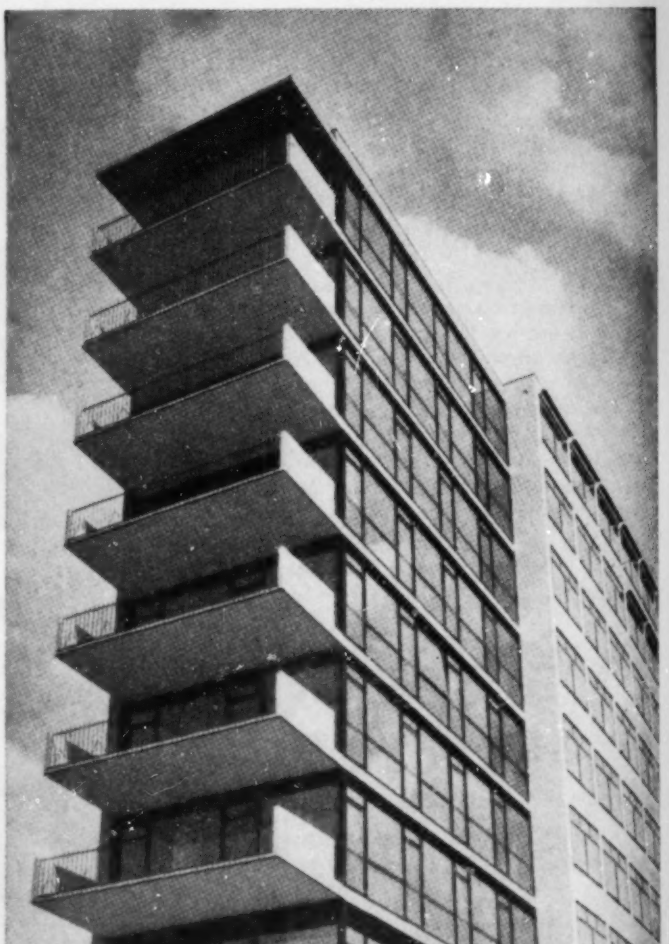
Near Mexico City and above Lake Tequesquitengo (sounds like "take waistcoat 'n' go!") rises a six-story, multicolored hotel that clings to the cliff with the tenacity of a colorful bougainvillea vine. Designed by Architect Mario Pani, the hotel has six main elements: a white upper-level entrance lobby, a yellow block of guest apartments, a red stair tower, a beige curtained convention hall, a breakfast terrace, and cocktail lounge with candy-striped umbrellas. The elements are connected by open air passages.

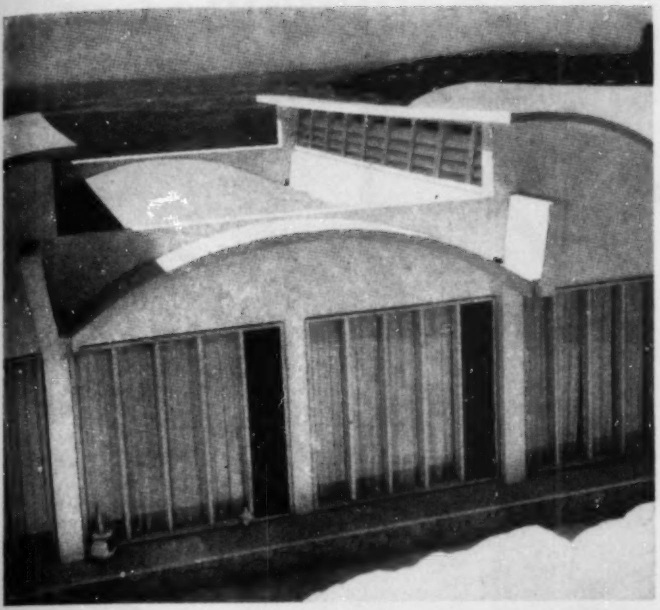
GERMAN NATURE

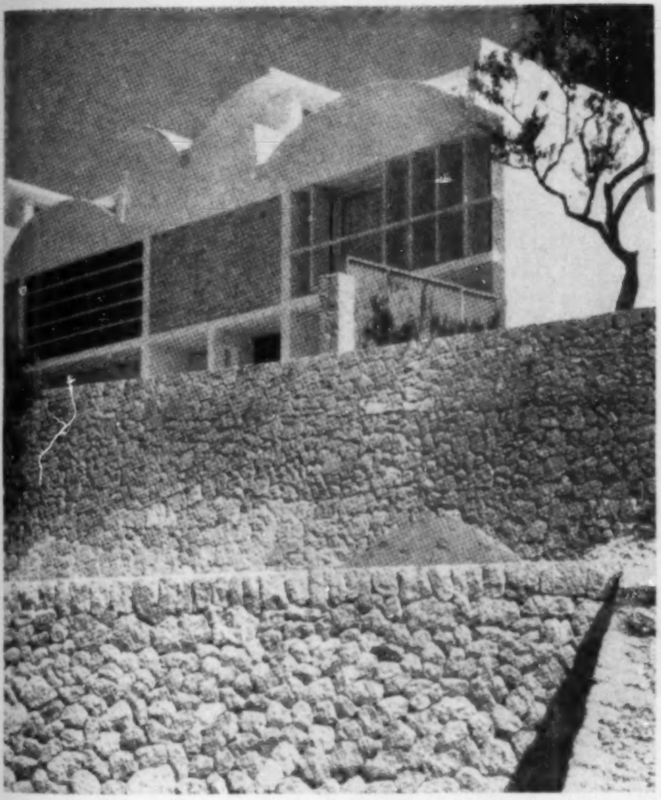
The continued faith of Europeans in the curative power of nature is reflected in Architect Harald Deilmann's hospital in Bad Salzuflen, West Germany. The hospital board felt that many contemporary hospitals were merely impersonal, antiseptic temples to hygiene, told Deilmann to try something more natural. Like Alvar Aalto's famous flying balcony sanitorium at Paimio, Finland, Deilmann's building (below) lures nature indoors through balconies and broad windows, urges patients to look out as a part of their cure. On the ground floor in a separate, one-story wing, are facilities for taking advantage of the area's waters, rich in healthful minerals.

PHOTOS: BAUWELT









PHOTOS: BAUWELT

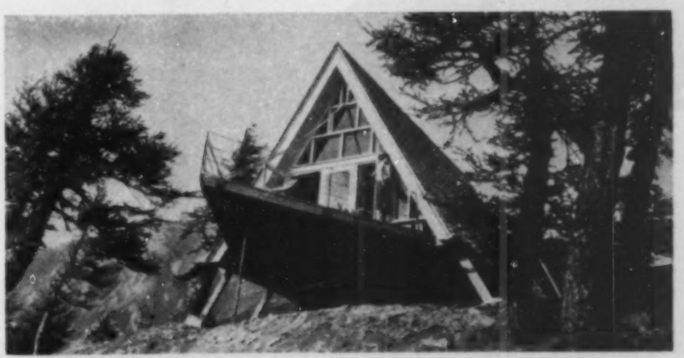
SPANISH SEA GULL

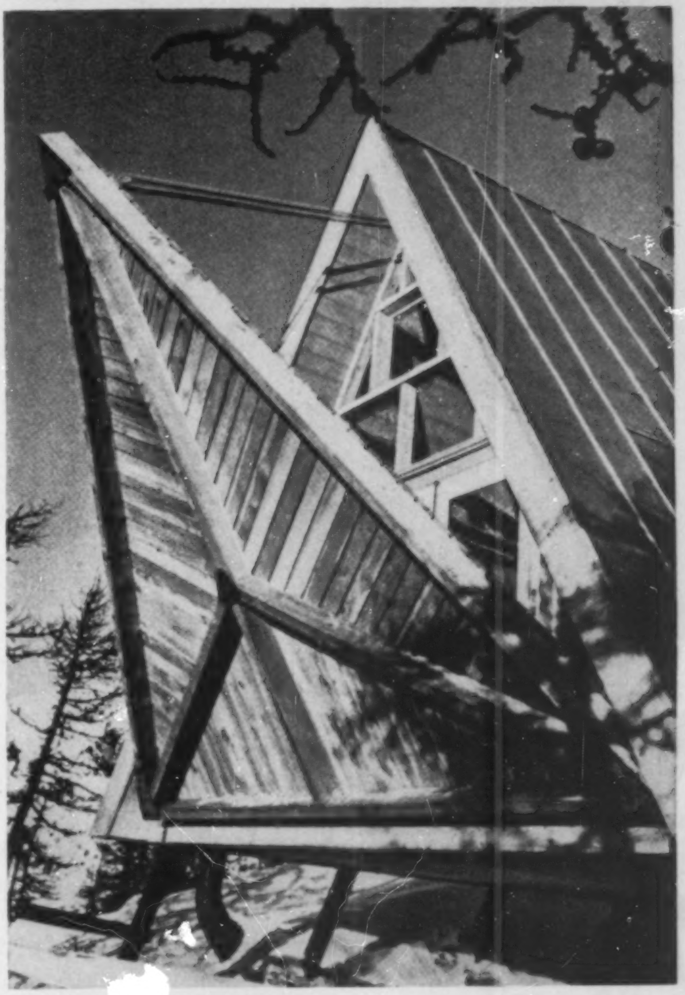
On the fashionable island of Mallorca off the east coast of Spain, Dean José Luis Sert of Harvard's Graduate School of Design has built a modish, sculpture-conscious house for Spanish Artist Juan Miro. Above the rock retaining walls that rise from the sea, the concrete roof shells arch like sea gull wings. The wings' functional purpose is to bring air and filtered light down through louvers (top) into the two-story-high studio below. North light enters a smaller mezzanine workroom through the glass wall of the entrance side, while the Mediterranean glare from the seaside is kept out of the house by means of *brise-soleils* of various shapes and sizes and attitudes.

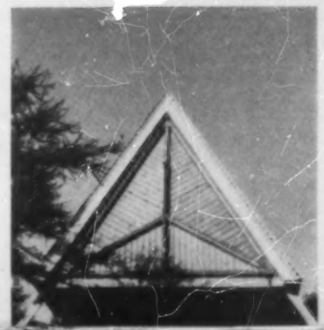
SWISS PINE

High in the Swiss Alps, Architects Heidi and Peter Wenger have built a tent-shaped week-end house that answers most of the problems of architecture in mountainous landscapes. The structure consists simply of three-sided frames, set in concrete bases, and a suspended floor. The roof's steep pitch sheds snow handily, and the curiously medieval, retractable front porch (below) also prevents winter damage. In the spring the Wengers arrive, the porch is lowered, and the cottage looks as simply triangular as any of the surrounding pine trees.

PHOTOS: HABITATION







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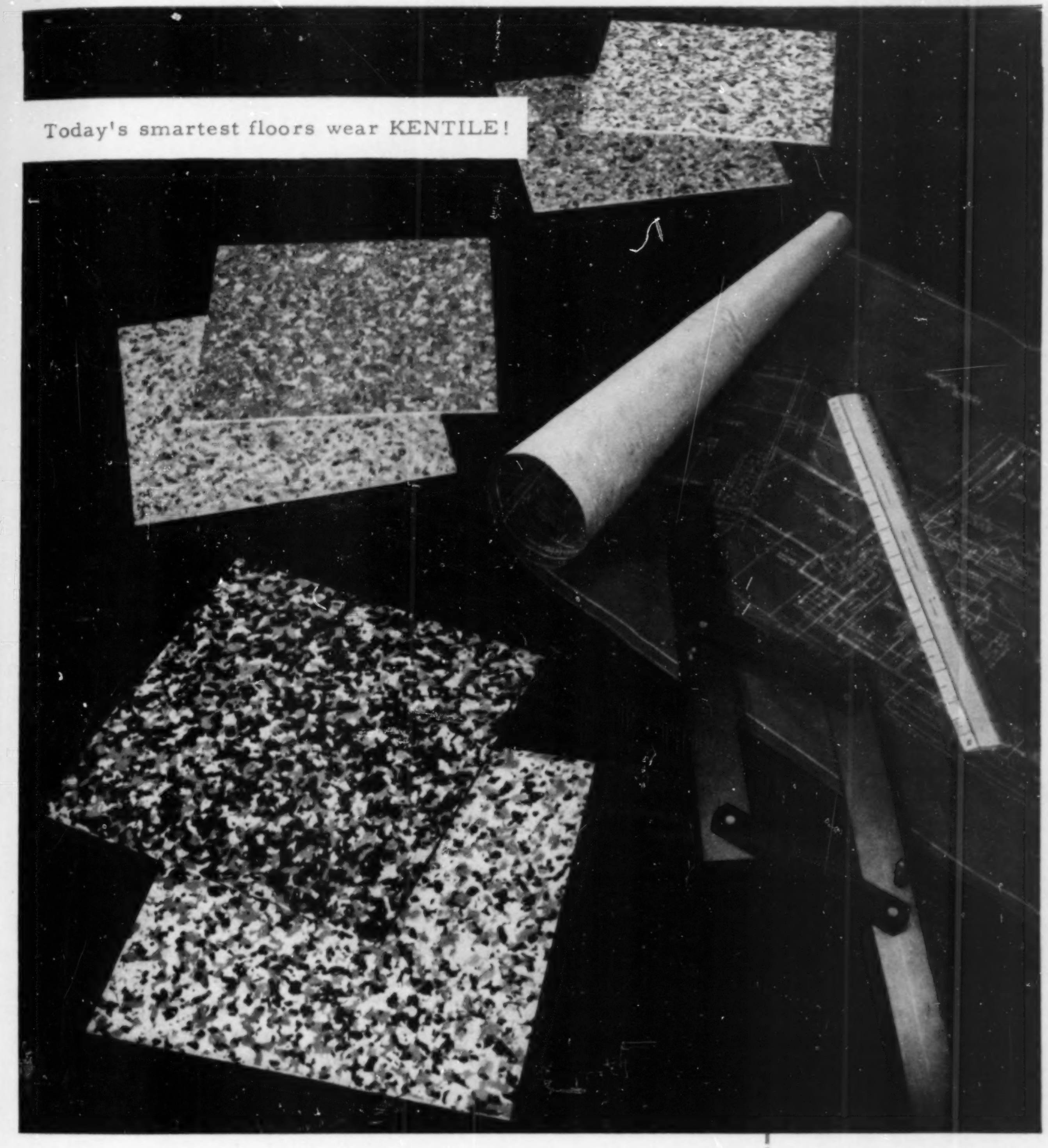

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... the only resilient tile flooring that captures the monolithic character of troweled-on Terrazzo. In rich, matched pairs for contrast and harmony.

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9" x 9"

THICKNESSES:
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COLORS:
(In the order shown)
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Dark Tennessee
Dark Sandstone
Sandstone
Dark Granite
Granite

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- ★ SPILLED FOODS
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- ★ TRACKED-IN DIRT
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